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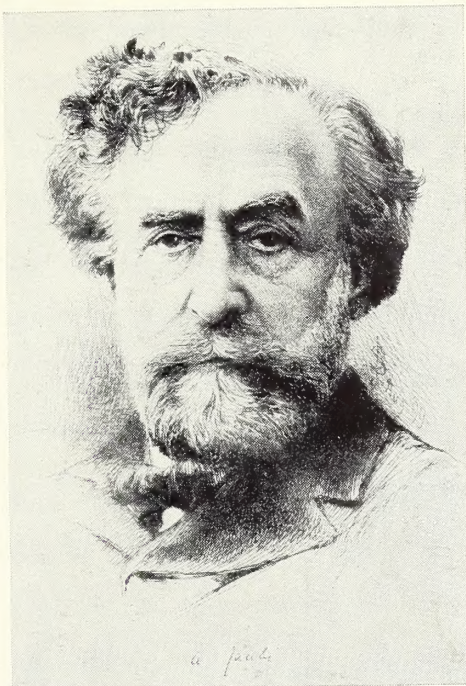
Connecticut State
Medical Journal

Volume 35/January 1971/Number 1

PEDIATRIC ISSUE: Victor L. Szanton, M.D., Guest Editor

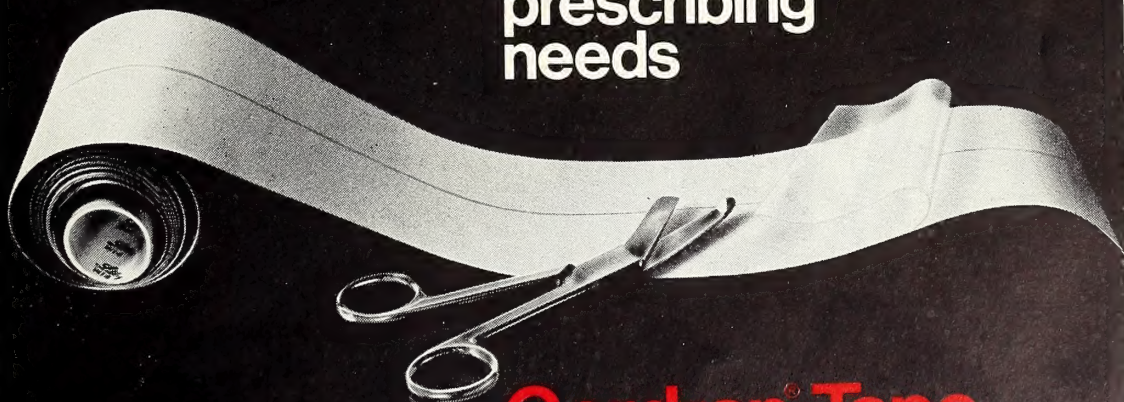
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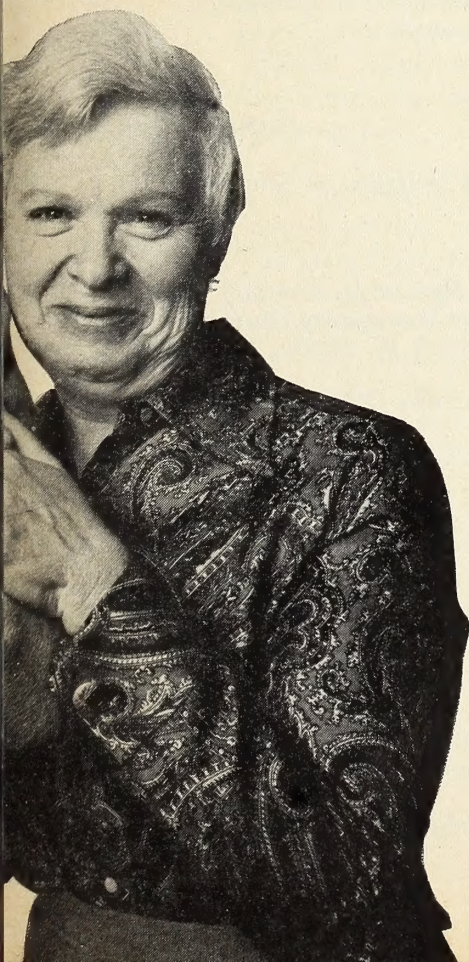
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Subscription rate for non-members \$15.00; Student-Members, interns and residents \$7.50; single copy \$1.50.

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THE PRESIDENT'S PAGE

This issue of *Connecticut Medicine* inaugurates its thirty-fifth year. We can be justly proud of the high quality of the Journal and should be grateful to the Editor and the Editorial Board for their untiring efforts and dedication in maintaining this high quality.

Elsewhere in this issue is my President's Address delivered at the Semi-Annual Meeting of the House of Delegates on November 19, 1970. I had hoped at that time that some of my thoughts could be discussed and elaborated upon during the reference committee hearing. Since this did not occur I would like to elaborate here.

I advocated the team approach to the solution of the various problems the medical profession faces today, and recommended that we initiate consultations with representatives of other providers of health care and, where indicated, with responsible representatives of patients, to discuss matters of mutual concern. This was not idle rhetoric on my part. As I indicated in my President's Page in the December 1970 issue of *Connecticut Medicine*, in which I discussed continuing Medical Education, I suggested that this Society join with medical educators and hospital staffs and administrators to provide more and better continuing education. The medical educators would help by supplying the content and methodology of the educational program, the hospital staff would suggest the subjects to be included and together the staff and administrators would provide the audience and the site of the program. The hospital staff is a most important participant in planning a continuing education program since it knows in what areas its members are deficient or could benefit by an educational program. The Medical Society would serve to bring these groups together and through its Committee on Postgraduate Education assist in planning and implementing the program.

In the area of Professional Liability we should initiate discussions with insurance carriers, and hospital staffs and administrators. The insurance carriers can contribute their knowledge as to what acts result in malpractice actions. The hospital staffs and administrators must be included because 80 percent of malpractice suits are the result of acts which occur in the hospital. Only by a full appreciation of the problem and a concerted joint effort by all concerned can a solution be found. I have not included the legal profession in these deliberations because I am not sure as to its merits. Perhaps after preliminary discussions by those mentioned they may choose to do so.

In the area of Medical Care the team approach must include representatives of our patients. We must initiate discussions with advocates of all types of systems for providing medical care and with other health professionals. The manpower shortage and the maldistribution of physicians require a joint effort by all able to help. Our patients can assist by telling us what they want or don't want, and, by participating in the discussions, they can appreciate the enormity of the subject. Our patients can look at the health care and medical care picture from a different vantage point, that of the consumer. They are not subject to the pressures of vested interests and hopefully will be objective.

We can control cost, quality, and utilization of medical care by use of the "Peer Review" mechanism. However, we may want to join with other health professionals in certain aspects of these activities. Peer Review can also be an educational experience but in order to achieve this there must be wider use of "reviewers".

I feel strongly that organized medicine should take the initiative and invite other health professionals and other interested parties to join in meaningful deliberations to help find the solutions to the problem of providing more and better medical and health care at reasonable cost.

Since my President's Address mentions the problem posed by CRMP, I feel I should bring you up to date on the subject. At its meeting on October 29, 1970, the Council passed a resolution re-affirming "its previous contention that CRMP is not authorized by statute to advocate policies and fund programs which promote restructuring of established patterns of providing and financing health care services in Connecticut." A copy of the resolution was forwarded to various people in Washington. At the recent Semi-Annual Meeting of the AMA House of Delegates in Boston, the Connecticut Delegation introduced a resolution disapproving of those RMP programs which are directed towards restructuring the method of delivery and financing of health care and also disapproving of the remarks made by Dr. Harold Margulies mentioned in my President's Address. When the resolution was heard in reference committee, the President of the Illinois State Medical Society supported the resolution, stating that they were having similar trouble with RMP in Illinois as well. The reference committee recommended that the resolution be referred to the AMA Board of Trustees for its consideration and appropriate action. This recommendation was adopted by the House of Delegates.

Since then a letter has been received from Dr. Harold Margulies in reference to the resolution passed by the Council and forwarded to him. It seems we still do not "understand" the legislation and anyway the new legislation now authorizes everything in spite of the fact it still contains the "non-interference" clause. One wonders why Congress insists on keeping the "non-interference" clause if the legislation authorizes interference, as Dr. Margulies implies.

Morris A. Granoff, M.D.

Foreword

ABRAHAM JACOBI, M.D. — 1830-1919 — PIONEER PEDIATRICIAN

From the time of his youth onward, Abraham Jacobi was driven forward by a rebelliousness, a revolutionary dynamism fresh and creative, an organizational genius, and a quality of courage that carried him through a Horatio Alger-patterned career in American medicine.

Born in Germany in 1830 he came to the United States in 1853. "In the manner of European students of that day he had gone from one university to another, from Greifswald to Göttingen and from these to the University of Bonn, from which he was graduated in 1851. He first studied oriental languages, but soon was attracted to medicine through his interest in anatomy and physiology. Meanwhile the Revolution of 1848 broke out and the young student was drawn into the struggle."¹ Abt² states that during Jacobi's student days he was associated with Karl Marx and Frederick Engels. "When he went to Berlin to appear for his examinations he was seized by the Prussian authorities and imprisoned for a year and a half in the fortress at Cologne. Finally, acquitted of the charge of treason, he was convicted of lèse majesté and sent to Minden. He served only six months of his sentence. Having gained the friendship of the jailer he made his escape to Hamburg where he boarded a ship for England. From England he embarked on a forty-three day voyage to the United States, landed in Boston and from there made his way to New York. . . . in the first year of practice he earned nine hundred and seventy-three dollars and twenty-five cents by charging twenty-five cents for office visits, fifty cents for house calls and five to ten dollars for obstetrical cases."¹

One year later, at age 23, he had invented a laryngoscopic mirror and by 1854 was completely integrated into the American medical scene.

By 1857 this political refugee, ex-convict, fugitive from the justice of a tyrannical government had developed so fine and sound a medical reputation that he was appointed attending physician to the German Dispensary which opened its doors that year. Busy as the Dispensary kept him, however, he made the time to write prolifically on a wide variety of medical subjects and his published papers make up a total of eight volumes, including a text with Noeggerath entitled "Midwifery and the Diseases of Children." Thirteen years later he had become clinical professor at the College of Physicians and Surgeons, and his pioneering work as a bedside teacher in pediatrics was already revolutionizing the patterns of instruction in other fields of medicine.

A brilliant physician, teacher, and scholar, Jacobi understood the social as well as the medical problems of the day. He had an unbounded enthusiasm for creating a practical, societal application of medical knowledge, a missionary ardor for bringing the benefits of his chosen discipline to all the people. This first President of the Medical Board of New York's Mount Sinai Hospital was known to go through the hallways of tenements knocking on doors, insisting

that the occupants boil the milk to prevent diarrhea. He followed this through by encouraging the philanthropist, Nathan Strauss, to set up pasteurized milk stations for the poor throughout the city.

Jacobi was sixty years old when the "Gay Nineties" came in. His striking appearance, the statuesque head with its gray hair as profuse as ever, suggested the lion that, in fact, he was. By then his reputation for integrity as a doctor, and as a fighter for improved medical standards had placed him in the leadership of the New York medical world. "He was constantly called upon as a consultant and wielded wide influence. At that time a new flow of European immigration was filling the slums on the east side of the city and sickness among the tenement dwellers was a frequent calamity. On such occasions there was an almost pathetic faith in this consultant "professor from Uptown". Summoned at the last minute to some emergency case, his entrance was usually dramatic. Dressed in a black overcoat with a flowing cape and a broad brimmed black hat he would dash up in a black coach drawn by two black horses."¹

Abraham Jacobi became President of the New York Medical Society, and later President of the New York Academy of Medicine. His zeal and activity in and for his profession prompted him to become a founder of the German Hospital, (now Lenox Hill Hospital), and . . . more importantly to all of us throughout the country . . . a founder of the Pediatric Section of the American Medical Association. He was the first President of the American Pediatric Society.

The United States had given him shelter and opportunity. The devotion with which he responded to this adopted land of his was dramatized many years later when, in 1903, he rejected a call to occupy the coveted Chair of Pediatrics at the University of Berlin with these remarks: "America was my refuge when I was a wanderer. She offered me a haven for these many years, and I shall not desert her for an offer from Imperial Prussian 'Potentate.'"²

In 1919, at the age of 89, Abraham Jacobi died. American medicine and generations of pediatricians, even to this day, bear witness to the gifts of his genius. He is remembered with warm respect and it may even be that we can still learn some added lessons by reflecting upon his life.

VICTOR L. SZANTON, M.D., *Guest Editor*

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Chocolate Allergy: A Double-Blind Study

Lawrence Maslansky, M.D. and Geraldine Wein, M.D.

For as long as there has been a clinical entity known as allergy, chocolate has been high on the list of offending foods. Most allergists remove chocolate *apriori* from their patients' diets on the commonly accepted theory that chocolate may be one of the causes of their allergic symptomatology.¹⁻³

Despite this widespread assumption, very little objective evidence has been accumulated to substantiate this opinion. A Medlar's search done by the National Library of Medicine in Bethesda on our behalf, revealed that only 4 citations were found under the title of hypersensitivity to cocoa. Three of these represented case reports with clinical impressions as the sole basis of their diagnosis.^{4, 5} Thus, it became apparent to us, that many physicians, and most laymen, accept chocolate allergy as an undisputed fact, when, in reality, there is very little scientific material to confirm this belief.

Joseph Fries in the Sept. '66 *Annals of Allergy*,⁶ reported a review of the records of 200 children who had received allergic diagnostic tests. 69% had positive reactions of slight 2+ (4 MM) or more to chocolate, compared to his previous report of 76%. Fries also investigated the possible antigenic cross-relationship between chocolate and cola, which are botanically related. In contrast to other writers, he reported no instance of clinical sensitivity to cola in a child reactive to chocolate.⁷

One of the major problems in this area of investigation applies to the diagnosis of food allergy in general. There is widespread dissatisfaction with, and disagreement as to the value of, skin testing in food allergy.^{8, 9} Rowe, Rinkel, Vaughan and many others have stressed the unreliability of diagnosing food allergy by means of cutaneous testing.¹⁰ Randolph indicated that food diaries are primarily of value for incriminating foods that are infrequently or intermittently ingested.¹¹ Patients are rarely able to detect sensitivity of foods eaten at least once daily.

Provocative feeding is limited in its effectiveness because of the subjective overlay associated with ingestion of suspicious foods. For this reason, masked ingestion tests have been attempted in the past. Mary Loveless, in 1950, reported a series of 8 patients who were clinically suspected of being allergic to milk, whom she tested by masked milk and placebo feedings.¹² Loveless herself conceded that plain powdered milk in capsules would be a superior testing technique, but apparently this was never pursued. This opinion was shared by Dr. Francis Lowell, who stated that "the food should be completely disguised by some means or other, and perhaps it is best given in capsules or by stomach tube."¹³

Because of the general dissatisfaction with our present methods of diagnosing food allergy, and our own personal impressions that many foods are often unjustly removed from patients' diets, we attempted to devise a feasible double-blind method of provocative ingestion food testing.¹⁴ Chocolate was chosen as our pilot study for 3 main reasons:

1. Because it is so commonly accepted as an offender, we thought we would easily accumulate a sizable group of patients to include in this study.
2. Because of its safety. To our knowledge, there are no reports of severe constitutional reactions following ingestion of chocolate.
3. It is feasible to give a sufficient quantity of almost completely de-fatted chocolate, extracted without chemicals, to equate with the ingestion of two 5¢ candy bars.

At this point, a short discussion of the composition of chocolate would be helpful, and probably surprising, to most of us. The amount of cocoa in an average bar of milk chocolate comprises only about 5% to 8% of the total weight of the bar!¹⁵ The remaining 95% are additives—sugar, milk solids, artificial flavorings, etc. Actually, then, the additive in a chocolate bar is chocolate!

Cocoa beans are grown chiefly in West Africa, Brazil, Ecuador, Venezuela and the West Indies. Few people realize that it was Columbus who first discovered cacao beans in the New World, but in

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this instance, he "missed that boat", since neither he nor King Ferdinand realized the importance of the beans. It was the famed conquistador, Cortez, who found the Mexican Aztec Indians using cacao to make "chocolati", the royal drink of Emperor Montezuma's realm. However, Cortez disliked the bitter taste of the native concoction. Before introducing chocolate to his homeland in 1528 he and his officers decided to sweeten it with sugar. This was the forerunner of our present-day chocolate.

In manufacturing chocolate, the pods of the cacao plant are harvested, cut open and the beans are sun-dried. The cocoa bean is roasted by the manufacturer and the outer shell is removed. The meat of the bean is called the nib. The nibs are ground in large stone mills and the heat from the grinding liquifies the nibs forming chocolate liquor. This product is known as unsweetened or cooking chocolate. 55-56% of this chocolate liquor consists of cocoa butter, which is a practically tasteless fat extracted from the liquor under high pressure. Cocoa butter is used in the manufacture of eating chocolate, drug products and cosmetics. The portion of the chocolate liquor remaining after extraction of most of the cocoa butter is cocoa powder. This is the fraction of the cocoa bean which we used in our study, since it represents the purest and most concentrated form of cocoa obtainable.

The purpose of our study was to correlate the relationship, if any, between clinical symptoms, skin test findings, and provocative double-blind feeding tests on those patients who manifested clearly defined symptoms after the ingestion of chocolate.

Method of Study

Questionnaires were distributed at random to 500 patients currently under treatment for allergy in our private practices. (TABLE 1). Among the questions asked were the following:

- 1. Do you eat chocolate? If the answer was Yes, we asked if any allergic symptoms followed. If the answer was No, we asked the reason.
- 2. Were you ever told to stay away from Chocolate? If so, by whom?
- 3. Can you tolerate cola drinks?

For our study, we excluded the following categories:

- 1. Those patients who would be unable to swallow capsules.
- 2. Patients with symptoms that were too vague or inconsistent to be reliable subjects.

3. Patients with such continuous allergic symptoms that it would be virtually impossible to evaluate the superimposed effect of chocolate.

We selected the patients who apparently manifested very specific allergic symptoms within a predictable time after eating a consistent quantity of chocolate. Two sets of opaque capsules were prepared for us, one containing pure de-fatted cocoa with all but 2% cocoa butter extracted. No alkalis were used for the extraction. 6 capsules contained more de-fatted cocoa than is found in 2 average 3/4 ounce bars of packaged milk chocolate. The 2nd set of capsules, which appeared identical to the first, contained an inert placebo. The patients were instructed to avoid all forms of cocoa, chocolate, cola and any other foods that they thought might disagree with them for 4 days prior to the ingestion of the capsules. Using a double-blind procedure, 1/2 the cases were started on Code 1 capsules, the other 1/2 on Code 2. They took 6

TABLE 1
CHOCOLATE SENSITIVITY QUESTIONNAIRE

NAME	AGE	SEX
ALLERGY SYMPTOMS:	Sneezing	
	Wheezing	
	Hives	
	Eczema	
	Nasal Stuffiness	
	Coughing	
	Other	
	RELATED SYMPTOMS:	Headache
Gastro-Intestinal:		
Pain		
Gas		
Diarrhea		
Fatigue		
Nasal Polyps		
Dizziness		
Other		
DO YOU EAT CHOCOLATE - - - - - YES..... NO		
Were you advised not to eat chocolate? - - YES..... NO		
If so, by whom (physician, parent, other)		
What was the reason for not eating chocolate:		
Do you have any ill-effects? - - - - - YES..... NO		
If "Yes", describe:		
DO YOU DRINK COCA-COLA OR		
OTHER COLA DRINKS? - - - - - YES..... NO		
If "No", why not?		
REMARKS:		
.....		
.....		
.....		
.....		

capsules every morning after breakfast for 6 consecutive days, to determine if there were any cumulative effects. Food and symptom diaries were supplied for the patients' records. After a 2-day period, patients were interviewed, and the alternate capsules were supplied for an additional 6-day trial, again keeping continuous records. All the patients in the study were re-tested by scratch and intracutaneous techniques with the following antigens:

Scratch test material obtained from 2 commercial allergy laboratories, as well as the test material used in our capsules.

Intradermal chocolate, 10,000 PNUS, obtained from 2 commercial laboratories.

Results

1. Questionnaire (TABLE 2)

In response to the question, "do you eat chocolate?", 408 patients (81.6%) answered "Yes". 294 (58.8%) of these stated that they had no symptoms following chocolate ingestion, 69 (13.8%) claimed that they had allergic symptoms, and 45 (9.0%) said that non-allergic symptoms occurred (primarily acne).

Of the 18.4% (92 patients) who did not eat chocolate, 30 (6.0%) disliked it, 12 (2.4%) thought it produced allergic symptoms, and 50 (10%) thought it caused acne. A total of 164 patients (32.8%) had been told to avoid chocolate; 139 (27.8%) by physicians, 11 (2.2%) by allergy testing laboratories, and 14 by laymen (2.8%).

In summary, a total of 32.8% of the 500 patients had been told to avoid chocolate, although only 16.2% thought that it was a factor in their allergic symptomatology.

3 of the 500 patients (0.6%) thought that cola drinks caused allergic symptoms. All of these patients ate and tolerated chocolate. 2 of these 3 had positive intradermal tests to chocolate.

2. Results of Skin Testing to Chocolate on these 500 patients (TABLE 3)

The results of skin test to chocolate in allergic patients were very closely correlated in our study and that of Dr. Fries. Of 200 patients on whom Dr. Fries performed intradermal tests, 139, or 69%, were positive. We tested 500 patients, 6 were positive on scratch tests, and 372 on intradermal tests, for a total positive of 67%.

TABLE 2
500 ALLERGY PATIENTS QUESTIONED

I—DO YOU EAT CHOCOLATE:			
YES: 408—81.6%	a—No effect	294	58.8%
	b—Allergy symptoms	69	13.8%
	c—Non-allergic (Acne)	45	9.0%
NO: 92—18.4%	a—Dislikes	30	6.0%
	b—Allergic symptoms	12	2.4%
	c—Non-allergic (Acne)	50	10.0%
A total of 16.2% of patients thought chocolate had an allergic effect.			
II—WERE YOU TOLD NOT TO EAT CHOCOLATE:			
YES: 164—32.8%			
By Whom:			
139	Allergist/Other M.D.	27.8%	
11	Allergy Lab	2.2%	
4	Lay People	.8%	
10	Self	2.0%	
Do Cola drinks cause allergic symptoms:			
Yes: 3		0.6%	
All eat and tolerate chocolate			
2: intradermal + to chocolate			
1: intradermal — to chocolate			

TABLE 3
RESULTS OF SKIN TESTING

Author	Number Case	Positive Scratch	Positive Intradermal	Percent Positive
Fries	200	Not Done	139	69%
Maslansky-Wein	500	6	372	67%

TABLE 4

Case No.	Patient	Age	Presumed Clinical Symptoms After Chocolate Ingestion	Allergy Test Results		Provocative Feeding	
				Scratch	ID	HJ*	NS
1	J.G.	35	Severe Headaches	—	+	—	—
2	T.W.	35	Sneezing	—	—	—	—
3	L.S.	42	Fatigue And Gastric Bloating	—	—	—	+
4	F.C.	14	Urticaria	+	ND	—	+
5	P.S.	60	Rhinorrhea	—	+	—	—
6	A.P.	24	Nausea And Cramps	—	—	—	+
7	P.D.	4	Urticaria	—	—	—	—
8	M.M.	50	Wheezing	—	+	—	—

HJ* = Placebo Capsule
NS = Cocoa Capsule

3. Summary of the Case Reports of Double-Blind Feeding (TABLE 4)

From our initial group of 81, we were left with only 10 patients who were suitable subjects.

8 of the 10 cases accepted for study, completed all phases of the investigation. The age range was from 4 to 60 years. The suspected allergy symptoms included: severe headaches, sneezing, tension-fatigue syndrome, hives, wheezing, rhinorrhea, nausea and cramps.

The suspected allergy symptoms were reproduced in 3 of the 8 cases. These were: the fatigue syndrome, hives, nausea and cramps. The patients with the fatigue syndrome and nausea and cramps were negative to all cutaneous tests. The patient with hives had a positive scratch test to cocoa. 3 of the 5 remaining cases had positive intradermal tests. All 8 cases were then knowingly challenged with a chocolate bar after being informed of the result of the double-blind test. The 3 cases who had been positive on provocative feeding reproduced their original symptoms. The other 5 were negative and are eating chocolate with no untoward effects.

Discussion

Dr. Francis Lowell, in 1951, stated "There is perhaps no field of medicine in which more divergent views are held than in that of allergy to foods. It would seem worthwhile, therefore, to outline some procedure by which a better understanding of the subject could be obtained."¹⁶

In reviewing just one facet of this problem, we found that the literature is so sparse on this subject that very little objective criteria are available with which we can correlate our findings.

The opinions of authorities in this field of allergy have run the gamut from Forman, who states "We find that chocolate is a ready sensitizer in children, and for years we have made it a rule to prohibit its use among children and young people"¹⁷ to Wiloughby, who included chocolate in his provocative food test chart, stating, "chocolate is added because of the frequent request of patients to know whether or not they are sensitive to this food. I have found it to be very low in the incidence of food sensitivity."¹⁸

If we were to accept positive skin reactions to the cocoa bean as definite indications of clinical sensitivity, we would have to agree with Joseph Fries' opinion that chocolate allergy is indeed very frequent. However, there was such a disparity between positive skin tests, clinical symptoms, and the results of provocative double-blind feeding,

that further investigation would seem to be indicated. Although our number of cases is small, this, in itself is significant. Not only did we question 500 patients, but these were 500 allergic individuals, which should have markedly increased the incidence of chocolate allergy among them.

It is our opinion that provocative blind feeding, in selected cases, may provide a useful and reliable adjunct in diagnosing food allergy. Its more widespread use may reveal that many foods have been unnecessarily and cruelly removed from patients' diets because of dependence upon inadequate techniques, personal prejudices and expediency. Have we been guilty of taking candy away from babies?

Summary

A double-blind provocative food test has been devised to effect a method for a more accurate analysis of chocolate sensitivity.

Questionnaires submitted to 500 allergic patients indicated that 32.8% were told to avoid chocolate—by physicians (27.8%), by allergy testing laboratories (2.2%), by laity (2.8%). 16.2% of total group thought that chocolate caused allergic symptoms. Out of this group of 500 allergic individuals, only 10 manifested very specific allergic symptoms within a predictable time after eating a consistent quantity of chocolate. By double-blind study, 8 of the 10 were fed both placebos and de-fatted chocolate in capsule form. The results were correlated with history and skin tests. In 3 of the 8 subjects, the reported clinical symptoms were reproduced after ingestion of the cocoa capsules, but not after the placebos. Only 1 of these 3 had a positive skin test to chocolate.

A review of the records of these 500 allergic patients revealed an incidence of 67% positive intracutaneous tests to chocolate, regardless of clinical symptomatology.

The disparity between skin test, provocative double-blind feeding, and clinical symptoms, indicates the need for a reappraisal of our present methods of diagnosing food allergy.

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Of Nesying out of Measure

When a chyld neseth out of measure, that is to saye with a long continuance, and thereby the brayne and vertues animall be febled, it is good to stoppe it, to auoyde a further inconuenience.

Wherefore ye shall annoint the head with the iuyce purcelane, sorell, and nyghtshade, or some of them, and make a plaister of the whyte of an egge, and the iuyce, with a litle oyle of roses, & emplayster the forehead and temples, with the mylke of a woman, oyle of roses, and vyneger a litle.

If it come of cold reume, ye shall make a plaister of mastike, frākēsence, mirre wine, & apply it to y^e former parte of y^e head. A fume of y^e same receiued in flax, & layd vpō y^e childes head, is holsome.—Thomas Phaire, *The boke of Children*

When irritable colon feels like this



The blowfish, a small species of fish, reacts to stress or fright by puffing itself up with air. After about a dozen noisy gulps the belly is balloon-shaped and hard. When replaced in the water the air is quickly expelled, and the fish sinks to the bottom.

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The Allergic Family And Pets

Victor L. Szanton, M.D.

When one of the wild men of old went into the wilderness and captured a creature with twice as many legs as his own and twice the speed he could command, he tamed it, trained it and so started an everlasting partnership between mankind and the animal kingdom. Anthropologists tell us this happened in the Stone Age. In the changes that have come about since that long ago time, many animals have become domesticated and virtually inseparable from man and his family life. The close proximity of these animals and man has also given rise, by times, to the cough, the sneeze, the wheeze and the itch—otherwise known as allergy! Recognized more than ever in the past several decades, because of its frequency, it has been the object of much documented medical literature. Authorities in the field of allergy unanimously call for the removal of pets from the household of all allergic individuals.¹⁻⁵ In many cases this is a preventive measure, since repeated exposure to animal hair and dander frequently gives rise to additional allergic illnesses in patients who initially do not demonstrate specific sensitivities to these allergens. In opposition to this measure is the allergic patient who refuses to function without the psychologic comfort and support of a pet animal. This is not a rarity. In fact, it occurs so frequently that it has become a formidable problem. The proscription of pets from the home of the allergic patient yields meagre compliance despite the physician's advice and instruction. The need for emotional comfort and support from a pet in juxtaposition to relief of the patient's allergic illness creates a dilemma for all those concerned. It has been suggested that the edict of removal of pets from the home is impractical and academic rather than realistic. It is with this conflict and the need for a more understanding viewpoint that this report is presented.

In a private practice a survey was made of the most recent 151 patients all of whom presented

major allergic syndromes. The distribution of allergic syndromes was as follows:

ASTHMA	— 48 patients
ALLERGIC RHINITIS	— 98 patients
ECZEMA	— 5 patients

All 151 were receiving hyposensitization for their specific allergies as well as cat and dog dander extracts. At the onset 61 of these patients had no pets and 90 had pets. Of the 90 having pets 17 followed traditional instructions to send their pets away. Roughly one half of the patients with allergic rhinitis insisted on keeping their pets in contrast to one third of those having asthma who behaved similarly. This group of zoophilics harbored 58 dogs, 29 cats, 5 birds, 2 guinea pigs, 5 turtles, 1 rabbit, 1 chipmunk, 2 salamanders, 2 lizards, 2 tortises, 2 ducks, some chickens and one monkey. (Included in this study were ten patients of specialist-physician families. Of these, eight had dogs in their homes and did not remove them.) The age distribution of these 151 patients was: up to six years of age: 45 patients; 6 years to 14 years of age: 62 patients; over 14 years of age: 44 patients. All were under specific hyposensitization treatment and supportive therapy.

It is harder to gain compliance with prescriptions for changes in personal and family habits than with an order to take medication. And there are, in fact, circumstances where realism and peripheral considerations require exceptions to be made. For instance: the patient's father, an animal keeper in a zoo for many years, will eventually have a pension on retirement. The allergist finds that the hair and dander from tiger, lion, monkey, wolf and bear are all positive in the asthmatic son's tests. The child is hyposensitized to these, the father retains his job, and the child's asthma is brought under control. This is in contrast to arbitrary disturbances of the bread-winner's occupation, causing a family upheaval and complete disorganization. Similar accommodation is indicated in the case of a research laboratory worker who becomes asthmatic to mouse hair and dander. Hyposensitization is effected, disorganization is avoided, the chosen occupation continues.

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So it is with the adult occupation—so should it be with a child. His occupation, especially in his preschool years, is *play*. If an animal playmate is essential to the support of his everyday living, careful consideration is to be given before the animal playmate-child relationship is broken.

Questions must be asked to determine the patient's reaction on exposure to pets at home and elsewhere. Is the child affected when visiting homes that have pets? On the way to and from school? At neighbors' homes? What happens on a trip when the pet animal rides in the car with the family? Does the pet sleep in the child's room—on the child's bed, perhaps? These, and many other questions arise in the singularity of each household and its customs.

Having obtained this information, it is then important to evaluate the family and its relationship to the pet. How and why was the pet acquired? Are the parents childhood animal lovers? Is the pet the parents' or the child's? How does it serve the family and what need does it fulfill? Is it a watch dog, a hunting dog, a show dog or a family pet and companion? What is the milieu of the home? Is it affectionate? communicative? permissive? quarrelsome? Is it emotionally deprived? Is it a broken family? Are both parents working—is the father working two jobs? Is it an over—"TV'd" home? Are the members of the family intramurally competitive? Are the parents cooperative? Is the patient an only child? Are there other peer companion-playmates for the patient? Since the pre-schooler suffers less grief with the loss of a pet than does the older child, what is the patient's age? Is he or she a disturbed child? In reality, what is the true significance of the pet to the family and to the child?

The questions asked and the answers, as they emerge, make it possible to render proper judgement. The essential question must be: Is the removal of a pet absolutely unavoidable for this child's well-being or will it do more harm than good? May it precipitate a seemingly small, but in reality a great disaster for the child?

From a broader point of view, we must recognize the sociologic aspects of pets in our society. Children are taught kindness to animals in their preschool years. The traditional stories, fables, fairy tales, children's literature, comic strips as well as the current moving pictures and "TV" programs all enhance the desirability of animal pets in the home. More significantly, the pressure to assume pet ownership is that of a personal need. The psychiatrist Bossard⁶ for instance, points out "The

advantage of having a dog: He is an outlet for affection and contributes to the person as a challenge for continuing responsibility. The dog helps in the sex education of children. The dog is a satisfactory victim of personal need for ego satisfaction and ego gratification. It satisfies the longing for power. It accustoms one to the normality of physical processes. It is a constant topic of conversation and an aid to social contact and new friends—and above all, the dog provides companionship."

Szasz⁷ states: "Many sensitive children depend on the pet animals for a free, uninhibited emotional relationship. Children often depend on a pet animal for a sense of permanence and security that their own parents *cannot* give them. The pet is always there. It does not go to work or in the evening, to social functions. It does not come home late at night exhausted. It does not divorce. It will not criticize. Children walking with a dog are filled with a sense of importance, of power, and protective superiority. Children do not make do with being told they are loved. They want proof. A pet dog outdoes a parent in this. He is affectionate, subservient, and is completely responsive. He is endowed with the psychic equipment to play whatever role is required of him by his master. (His inability to communicate verbally is typical of the child as of the dog.) He does not judge. He offers intense loyalty. He is not frightening or demanding. He does not expose his master to the ugly strain of constant criticism. The lonely child needs some one who especially belongs to him to give comfort and care—to reduce the separation anxiety of his loneliness."

Children, when asked why they wanted a pet dog, replied variously, "because I wanted to play with him after school", or "because there were no other kids around to play with", or "because I have no brothers or sisters", or "because the dog is my friend, he growls at everyone else".

Parents, when asked why they have pets, spoke in a somewhat less self-oriented vein. "It is better for a child not to come home to an empty house, so we have a dog." Another says, "He's a watch dog and companion to the family", or "A family is not complete unless you have a dog. I always had one as a child". "I think that anyone who has children and no animals is depriving them. They can learn the facts of life and a respect for nature", or "There was a stray dog, no one wanted him." "Children can learn from a pet. They'll know how to take care of an animal. I have 6 girls, ages 6 to 18. They learned what a dog's penis looked like."

And parents, as individuals, also have their own need for pets and their requirements also play a considerable part in the evaluation of the entire family constellation and the needs of all of its members.

The pediatrician especially, grounded in the preventive aspects of medical practice, advises *preventive* measures. Nevertheless, we find, after years of following the traditional rule of ordering pets banished from the household of the allergic patient, that the poor rate of compliance by patients and their families forces re-evaluation not only of the practicality of that regulation but also of its validity. New approaches must be developed. Whether or not animals are permitted in the home, there are a multitude of animal contacts the school child makes in school and on the way to and from school, permitted or no. These involve exposure to cats, dogs and other furry pets. Schools routinely have small animals in the classrooms for educational purposes. At one end of this clinical spectrum is the child who has a major allergy that requires hyposensitization. Whether cat-and-dog-dander sensitive or not and whether skin test positive or not, it is advantageous and preventive to include these animal dander extracts in this therapy just as one routinely immunizes against and prevents contagious diseases. At the other end of the spectrum may be the child who is so severely ill with intractable asthma that his life appears in jeopardy. In that case every means must be provided, removal of pets included, unquestionably and without exception, to sustain him. In between these two types of patients lies a broad band of the young of our society who need understanding. Their needs may be those that only a pet can satisfy—in contrast to a mother or father, neither of whom can compete adequately with a pet who is always available, willing, devoted, and non-critical. If a pet must be removed, the pre-school

years when a child suffers a shorter period of grief and recovers from it relatively quickly, is the optimal time to remove a pet rather than later in school years when a child is far more pet dependent. Into the turmoil of this problem another question must be introduced and answered: To whom is the removal of a pet most important? Is it unavoidably necessary for the child, or is it more important for the security of the physician?

Summary

A new, more realistic approach can be developed and made to serve well on the basis of the following recommendations:

1. Before removal of a pet is requested, careful evaluation and balanced judgement of the child's clinical response as well as of the role a pet plays in the home and in the life of the child are essential.
2. In the course of a child's illness if a pet must be proscribed, the optimum time is in the preschool age.
3. In the child who is being hyposensitized, cat and dog dander should be included routinely as a preventive measure in that therapy.

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The General Practitioner's Role Regarding Dwarfisms At Birth

Joseph A. Bailey, II, M.D. and Joselyn E. Bailey

In the interest of clinical and basic research this paper is presented to aid the general practitioner in recognizing dwarfs (disproportionate short stature) at birth.

For purposes of discussion, the numerous dwarfing conditions²⁻⁶ are divided into three groups as shown in Table 1:

Group I are individuals who are either born dead or die shortly after birth.

Group II members are viable and relatively well-proportioned at birth but in the postnatal period they may become disproportioned because of pathological fractures.

Group III are viable infants with rather obvious abnormalities in addition to their disproportionate short stature.

The rare lethal Group I members are important because of the possible insight they can give into the extremes of mesodermal abnormalities. Members include thanatophoric dwarfs, achondrogenic dwarfs, homozygous achondroplastic dwarfs, and dwarfs with Conradi's disease.

In Group II a wide spectrum of involvement may be seen in each entity, ranging from death in the perinatal period to only mild variation from normal. The outstanding characteristic is the ease with which fractures occur. Examples are osteogenesis imperfecta, fibrogenesis imperfecta, and hypophosphatasia. The dwarfing condition of Jeune's dystrophy is an exception since there is no fragility of bones. However, this latter dwarfism shows an extremely small chest cage with resultant respiratory distress.

Members of Group III include achondroplastic dwarfs, diastrophic dwarfs, metatropic dwarfs, pseudometatropic dwarfs, and dwarfs with the Ellis-van Creveld syndrome, cartilage-hair-hypoplasia, spondyloepiphyseal dysplasia congenita and spon-

dylometaphyseal dysplasia. Of the various mesodermal and ectodermal abnormalities seen in this third group, probably the most characteristic feature is a sudden block just short of full elbow extension (as opposed to the gradual extension halt in normal newborns).

Discussion

Common to members of Groups I and III are a disproportion between the limbs and the trunk; normally the fingertips of the extended upper limb extend to the mid-thigh of the supine newborn but in these dwarfs the fingertips barely reach the hip area. Except possibly for metatropic dwarfism, members of Groups I and III have significantly reduced birth lengths. These findings, associated with the abnormalities listed in Table 1, should prompt a particularly detailed history, physical, and radiographic examination. Such information would be greatly appreciated by interested consultants.

Management of the viable infants in Group III pertains mainly to the hands, feet and back; and to fractures in Group II.³ Extra digits of the hands and feet, often seen in Group III, should be surgically excised; the common practice of simply tying off the digit results in an unsightly deformity in later years. Surgery to correct the extension deformities of the interphalangeal joints of the fingers has generally been rewarding. A similar unrewarding experience has been noted in attempted corrections of the "hitch-hiker" thumbs of diastrophic dwarfs where the thumb sticks out at right angles to the palm.

The most common deformity requiring treatment in the lower limbs of Group III is clubfoot. Except in mild cases most of the clubfoot deformities should have very early surgery since fragmentary information suggests that plaster casting procedures are not significantly beneficial and interfere with the chance of successful surgery.

The backs of Group III dwarfs may show scoliosis, kyphosis, or both. These difficult problems

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are best managed by a pediatric orthopaedic surgeon. Procedures which involve stretching the neck of these individuals should be avoided until there is proper evaluation of the bony and neurological structures about the neck.

Management of the fractures of Group II follow general fracture principles, such as avoiding rotation, significant over-riding, or angulation. A simple method for treating relatively stable fractured femurs, when a spica cast or Bryant's traction is not desirable, is to strap the thigh to the abdomen and chest. However, traction is preferable to splinting in unstable or displaced fractures. Fractures of the humerus can be treated with the aid of von Rosen's frame¹ (normally used for congenital dislocation of the hip) or by immobilizing the arm beside the chest. Splinting is often sufficient for other fractures.

In summary the research significance of dwarfism is far greater than their rarity would suggest, particularly the lethal forms. The earliest and most common features are disproportion between the trunk and the limbs and a sudden block of the elbow just short of full extension.

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TABLE 1 SUMMARY OF DWARFISM'S RECOGNIZABLE AT BIRTH ²		
<i>Dwarfisms</i>	<i>Clinical, Roentgenographic and Laboratory Features</i>	<i>Genetics</i>
GROUP I		
Thanatophoric dwarfs	Femurs shaped like "Telephone receivers" Die within hours	±AD
Achondrogenic dwarfs	Very short limbs Invisible sacrum and pubic bones Stillborn	AR+
Homozygous achondroplasia	An affected offspring of achondroplastic parents Die within first week of life Severe skeletal involvement	?
Conradi's disease	Asymmetrical limb shortening Stippled epiphyses Bilateral congenital cataract Flexion contractures	AR
GROUP II		
Osteogenesis Imperfecta	Oblique fracture lines with callus Wormian bones of skull	AR
Fibrogenesis Imperfecta	Brittle bones	?
Hypophosphatasia	Fragile bones Low serum alkaline phosphatase Urine prophyroylethanolamine	AR
GROUP III		
Achondroplastic dwarfs	Rhizomelic micromelia Craniofacial abnormalities Small spinal canal (caudally) Short base of skull	AD*
Ellis-van Creveld	Acromelic micromelia Manual polydactyly Ectodermal dysplasia	AR
Cartilage-hair hypoplasia	Thin, light-colored hair Over-long fibulae Metaphyseal changes	AR
Spondyloepiphyseal Dysplasia Congenita	Short trunk Cleft Palate ± Absent pubic bones Mucopolysaccharide granules in mononuclear cells	AD
Spondylomctaphyseal Dysplasia	Short trunk Short limbs, rhizomelic ± Cleft Palate Prominent sternum Clubfoot	±AR
* Autosomal Dominant + Autosomal Recessive		

Pediatric Urinary Tract Infections:

A Review

Alan C. Davidson, M.D.

Introduction

Since the 1950's there has been a marked increase in both knowledge of and treatment modalities for urinary tract infections in the pediatric patient. Until then, the potential seriousness of these infections was not realized. It is not the infection, but the underlying pathology which is serious. We all too often see a young person with atrophic kidneys and a history of urinary tract infection as a child. Could the damage have been prevented if diagnostic testing was done when the patient was a child? We hope so, for that is the point of this review.

In order to summarize the information to date, this author will be showing his own bias for ease of presentation. In no way are these ideas unchangeable truths. Thoughts change and have changed rapidly as new information is brought to light.

Discussion

In the 1950's, the cystogram was rediscovered as was the causal relationship between vesicoureteral reflux and pyelonephritis.^{1, 2} Since then, there has been excellent documentation that pyelonephritis is caused by infected urine ascending the ureter to the kidney.³

Little girls have the predominance of urinary tract infections.⁴ These do not seem to cause harm. On the other hand, urinary tract infections in little boys usually stem from congenital problems which may become life threatening. The male anatomy protects the normal child better than the female anatomy with its short urethra.⁵ Vaginal irritations and inflammations spark many urinary tract infections in little girls, as shown by the frequent history of a vaginitis preceeding an attack of cystitis.

Hinman, Jr. developed an integrated theory that helps explain the mechanisms of urinary tract in-

fections.⁶ The basis of his work is to regard the urinary tract as a continuous culture bath. The kidney microstructures and the supravescical drainage systems may be looked at as a continuous culture bath with sterile media being added at a constant rate at one end, a constant volume chamber in the middle, and an intermittent container at the other end. If the urinary flow be sluggish and pockets of stasis are available, such as a dilated renal pelvis or ureter, the bacteria have a chance to multiply before being washed out and then an infection develops. If there is incomplete bladder emptying or slow inflow of urine or extended collecting periods, the bacteria may reproduce faster than they are being eliminated by voiding. This concept makes forcing fluids a valid approach to the management of the infected patient.

Using his and other researchers experimental data, Hinman, Jr. shows that there is a weak bacterial resistance in the normal urothelial lining. An inflamed urothelium loses its bacterial resistance. This information allows for a greater understanding of chronic, long term management of urinary tract infections with low strength antibacterials, in the face of sterile urine. By giving the urine slightly more resistance, without changing the bacterial sensitivity patterns, infections are prevented until the innate defense mechanisms in a healed bladder wall are able to do the task.

The urgency and frequency of cystitis now makes teleologic sense. Frequent voidings help to lower the amount of bacteria in the bladder, thus allowing for a more rapid clearance of infection. Stamey⁷ showed several years ago that forcing fluids in itself will rapidly sterilize a normal urinary tract.

Experiments by Teague and Boyarsky⁸ show that coliform organisms inhibit ureteral peristalsis causing stasis, again allowing for urinary tract infections to be maintained. Renal parenchymal scarring too, would leave micro-pockets of stasis which if left unprotected from bacterial invasion, may allow for pyelonephritis to develop as would partial obstructions on the ureteral level.

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The standard explanation that vesicoureteral reflux with its paradoxical bladder residual allows for occasional bacteria to remain behind and multiply is not the only reason for urinary tract infections. It is perhaps not even a reasonable cause of urinary tract infections. Many children reinfect and do not reflux.⁹ Other children continue to develop cystitis after successful surgical correction of vesicoureteral reflux. Cystitis seems to be secondary to urethral contamination.¹⁰

Cox has shown that the normal female urethra may be contaminated to the level of the bladder neck.⁵ One may postulate that an occasional bacterium falls into the female bladder from the urethra. If the child clears the bacterium before it multiplies, no one is the wiser. If there be a small amount of residual urine left after voiding, an increasing number of bacteria may develop per unit volume secondary to multiplication thus causing a clinical cystitis. If there be no gross anatomic problems, urinary frequency could conceivably sterilize the urine and we now have the fussy child with burning, sterile urine and a confused doctor. The irritated bladder goes edematous and inflamed, losing some of its intrinsic defense mechanisms. The next bacterium finding its way into the bladder may cause a documented cystitis, possibly with a pyelonephritis if the vesicoureteral juncture is incompetent. Antibacterials and supportive therapy clear the infection. The patient is again comfortable, but the bladder is still inflamed and ready for another invader. It should be remembered that occasionally only several red cells per high power field are seen microscopically after an acute cystitis. Red cells and sterile urine do not necessarily mean glomerulonephritis.

Lyon and Tanagho¹¹ have shown the distal urethral segment in females to be the corner stone of preventive therapy. Dilation or surgical excision of this area reduces the resistance to urinary flow, thus allowing for more complete emptying of the bladder,¹²⁻¹⁴ again breaking the cycle. Bougie a boule of the urethra has come into vogue in order to study the urethral caliber. Immergut and associates¹⁵ calibrated the urethra by this method in normal children and showed the distal urethra to average from 14 Fr. for small children to 20 Fr. for the immediately pre-pubital group, with a 2 to 4 Fr. variation. Beyond puberty, calibration advanced to 26 Fr. and larger. Immergut and Wahman¹⁶ in a later study showed the distal urethra in children with recurrent infection to be larger than the normal child.

Gleason, Bottaccini and Lattimer¹⁷ hold the key to the calibration paradox. They believe that calibration with a hard instrument does not give the actual hydrodynamic outlet size which would be influenced by tissue irregularities and minor changes in elasticity. They also state that the distal urethra, not the entire urethra, accounts for voiding outlet resistance.¹⁴ This all makes sense in light of many workers findings¹² that simple dilation or surgical enlargement of the distal urethra helps prevent recurrent infections.

What causes vesicoureteral reflux? Obviously, an incompetent vesicoureteral juncture. The juncture is actually a strip of ureter tunnelled through the vesical muscularis. As vesical pressures build up, the tube is literally pinched closed. If the intravesical segment is not long enough, the ureter will leak urine in a retrograde manner under increased pressure.¹⁸ Cystitis does cause edema of the juncture and may stiffen the juncture sufficiently to cause incompetence. This is a reasonable mechanism for causing pyelonephritis in a patient with a normally competent juncture. Lyon, Marshall and Tanagho¹⁹ categorized the various ureteral orifices and helped clarify the endoscopic picture of the incompetent juncture. The new categories allow for judgments as to whether conservative therapy will reverse reflux and whether one or both junctures should be repaired if surgery becomes indicated.

Investigation

Therapy must be based upon a careful investigation of the child. All males should be investigated after the first urinary tract infection, no matter how minor, as the male is much more apt to show serious pathology. The female should be evaluated if she shows systemic findings. If the attack does not abate immediately on chemotherapeutics, emergent evaluation should be carried out. I am coming to the conclusion that all children should be studied after the first documented urinary tract infection. The important word here is documented.

Approximately 20% of the females will show vesicoureteral reflux on an initial evaluation.¹² Even though some of this reflux might disappear when the bladder heals, it is important to spot these children and follow them very closely. The child who refluxes during infection must be protected from recurrent cystitis.

If one feels he would rather wait for the second attack of cystitis in a female before entering upon an investigation, I will not disagree as long as contact is maintained with the child. I do believe

almost every girl who is infected once will become reinfected before puberty, but this is only an impression. In our mobile society, children move so rapidly, they may be lost to proper follow-up and the golden moment lost.

The investigation itself should minimally contain an excretory urogram (I.V.P.) and a cystogram. A standard static cystogram is more than sufficient. It will show treatable reflux as nicely as the more sophisticated studies.²⁰ As a Urologist, I feel strongly that endoscopic evaluation is mandatory as this allows for a more definitive evaluation of the patient's ureteral orifices, status of the bladder, whether there be trabeculations, inflammation, etc. All of the above testing can be done in one sitting under one anesthesia in less than one-half hour, and if necessary, the distal urethra may be enlarged at the same time. The child could go home that afternoon or the next day and not feel psychologically traumatized.

Therapy

Hinman, Jr.'s⁶ concept of the urinary tract as a culture bath makes forcing fluids a valid approach to the management of the infected patient. This work also allows for a greater understanding of chronic long term management of urinary tract infections with low strength anti-bacterials, in the face of sterile urine. By giving the urine slightly more bacterial resistance, without changing the bacterial sensitivity patterns, infections are prevented until the innate defense mechanisms in a healed bladder wall are able to do the task.

The other basic therapy is dilation or surgical excision of the distal urethral segment to allow for the reduction in resistance to urinary flow, thus allowing for more complete emptying of the bladder.¹¹⁻¹⁴

Further intervention involving ureteroneocystostomies, pyeloplasties, vesical neck plasties, urinary diversions, etc. must be based on the conditions found.

Summary

The above discussion of urinary tract infection is basically food for thought. Each patient, one realizes again and again, is completely different from the next. The main point is: we must uncover the problem. Discovery requires an excretory urogram, cystogram and cystoscopy. Treatment in many respects follows smoothly after.

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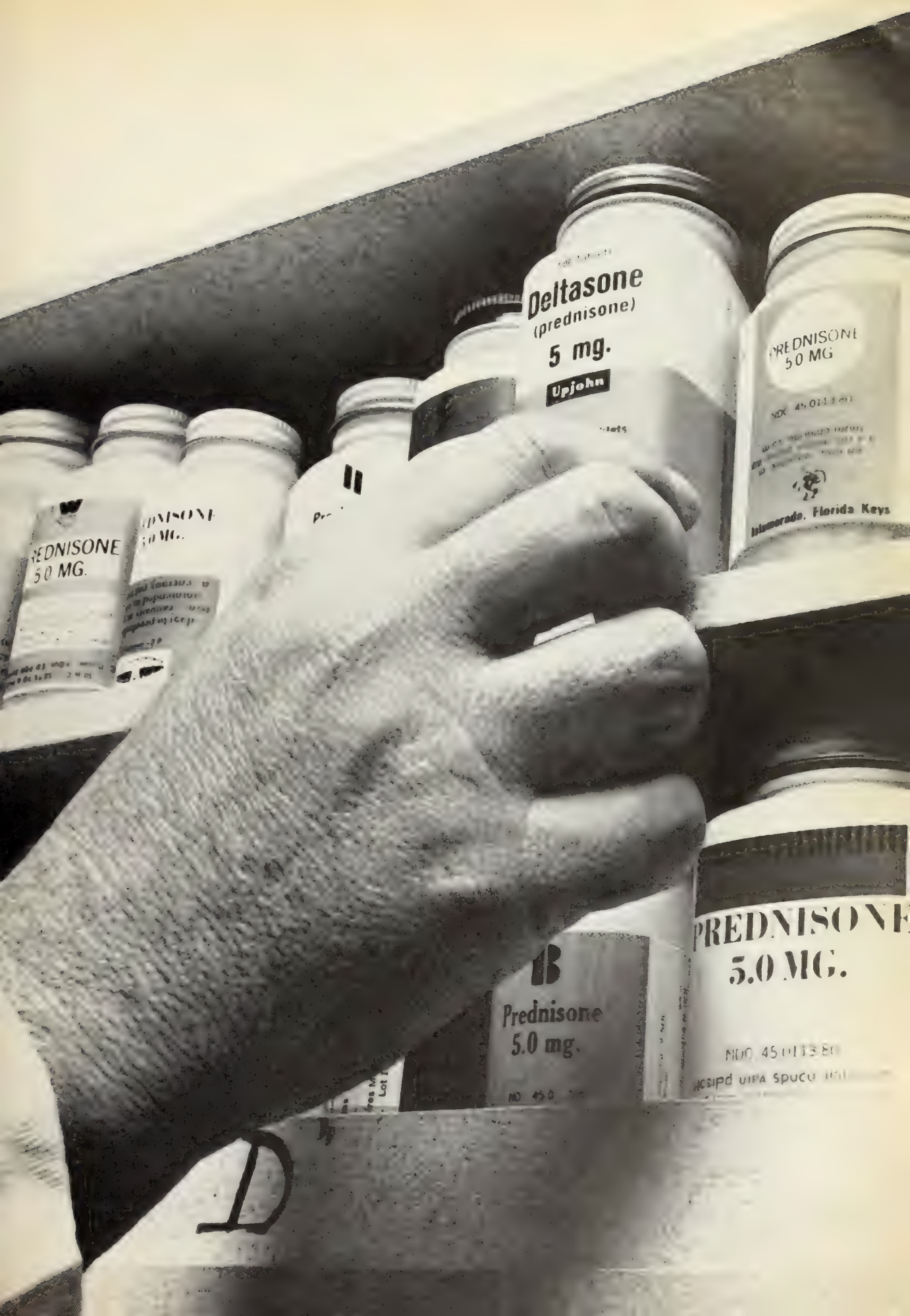
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Contraindications: As for all other corticoids. *Considered Absolute*—herpes simplex keratitis, acute psychoses and latent, healed or active tuberculosis. May be lifesaving in certain cases of pulmonary or meningeal tuberculosis, but should be used only in conjunction with adequate and effective antituberculous therapy to which causative organisms are shown to be sensitive. *Considered Relative*—active or latent peptic ulcer, Cushing's syndrome, diverticulitis, fresh intestinal anastomoses, osteoporosis, renal insufficiency, thromboembolic tendencies, psychotic tendencies, diabetes mellitus, hypertension, local or systemic infections including vaccination, varicella and other exanthematous diseases, and fungal infections, and, pregnancy particularly during the first trimester because of observation of fetal anomalies in experimental animals. If necessary to give corticosteroids during pregnancy, watch newborn infants closely for signs of hypoadrenalism and institute appropriate therapy if signs appear.

If corticoids are used in the above conditions, weigh risks against benefits.

Precautions: Deltasone should be given only with full knowledge of characteristic activity of and varied responses to corticoids. Because of inhibiting effect on fibroplasia, corticoids may mask signs of and enhance spread of infection; hence, watch patients closely, and if intercurrent infection occurs, control with appropriate antibacterial measures. If possible, avoid abrupt cessation of corticosteroid therapy because of the danger of superimposing adrenocortical insufficiency on the infectious process. Prolonged hormone therapy usually causes a reduction in the activity and size of the adrenal cortex. When discontinuing therapy, relative adrenocortical insufficiency may be avoided by gradual reduction of dose. However, a potentially critical degree of insufficiency may persist asymptotically for some time even after gradual discontinuation of adrenocortical steroids. Therefore, if a patient is subjected to significant stress, such as surgery, trauma, or severe illness while being treated, or within one year (occasionally up to two years) after treatment has been terminated, hormone therapy should be augmented or reinstituted and continued for the duration of the stress and immediately following it. Since mineralocorticoid secretion may be impaired, salt and/or desoxycorticosterone should be administered conjunctively. It is preferable to use a soluble hormone preparation in the immediate preoperative and postoperative periods.

Although unlikely with Deltasone, average and large doses of corticosteroids can cause elevation of blood pressure, salt and water retention and increased potassium and calcium excretion. Dietary salt restriction and potassium supplementation may be necessary. Glucocorticoid steroids may aggravate diabetes mellitus so that higher insulin dosage may become necessary or manifestations of latent diabetes mellitus may be precipitated. Corticosteroids may aggravate myasthenic symptoms in myasthenia gravis and should be given with proper precautions.

Muscle weakness, in some instances, attributed to hypopotassemia, has been reported following prolonged systemically administered corticoids. Excessive potassium loss, like excessive sodium retention, is not likely to be induced with effective maintenance

doses of Deltasone (prednisone), however, keep this effect in mind and perform periodic serum potassium determinations in patients on prolonged corticoid therapy. Muscle weakness occurring with normal serum potassium levels may be due to disturbance in muscle metabolism. Severe myopathy is associated with substantial doses of steroids for prolonged periods, and evidence indicates it occurs more frequently with 9- α -fluoro steroids. Replacement with non-fluorinated steroid has, in some instances, resulted in improvement.

Retardation of linear growth, roughly proportional to dose, has been noted in children on corticoids for six months or more. Following cessation of therapy, growth rate may be accelerated. Therefore, carefully observe growth of children on prolonged corticoid and if growth is retarded, reduce dose sufficiently to permit recovery before epiphyseal closure. Make every effort to avoid corticoids during pregnancy, since spontaneous remission of some diseases such as rheumatoid arthritis may occur. Long term corticoid therapy may evoke hyperacidity or peptic ulcer, therefore, as prophylaxis, an ulcer regimen and antacid are highly recommended. Take X-rays in peptic ulcer patients complaining of gastric distress, and, whether or not changes are noted, an ulcer regimen is recommended. Since prednisone causes less salt and water retention than many other glucocorticoids, patients should be observed closely for development of undesirable hormonal effects that are less obvious indications of steroid toxicity than edema and hypertension due to salt and water retention. Continued supervision of patients after cessation of therapy is essential, since there may be a sudden reappearance of severe disease manifestation.

Adverse Reactions: Adverse reactions associated with use of corticoids include: Cushing's syndrome, moon facies, supraclavicular fat pads, hirsutism, striae and acne; relative adrenocortical insufficiency particularly in time of stress due to trauma, surgery or severe illness; protein catabolism with negative nitrogen balance; electrolyte imbalance; alteration of glucose metabolism with aggravation of diabetes mellitus including hyperglycemia and glycosuria; osteoporosis reversible only with difficulty; spontaneous fractures; aseptic necrosis of the hip and humerus; activation and complication of peptic ulcer including perforation and hemorrhage; aggravation or masking of infection; increased blood pressure; convulsions; petechiae and purpura; menstrual irregularities including amenorrhea, spotting or prolonged bleeding; insomnia; psychic disturbances especially abnormal euphoria; nervousness; posterior subcapsular cataracts occasionally requiring extraction; increased intraocular tension; increased intracranial pressure with papilledema (pseudotumor cerebri); pancreatitis; necrotizing angitis; thinning of scalp hair; suppression of growth in children; thromboembolic complications; facial erythema; allergic skin reactions; ulcerative esophagitis; sweating; vertigo; weakness; myopathy; headache; exophthalmos. Adverse reactions are usually reversible and usually disappear when drug is discontinued.

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Connecticut Medicine

A Look Into The Future Of Medical Practice

A basic overhaul in medical training was recommended to the Association of American Medical College on October 27, 1970 by the Carnegie Commission on Higher Education. It seems to give American health services a sharp nudge toward the European model of socialized medicine. In 1910, the Flexner report also commissioned by the Carnegie Fund established the emphasis of medical training in biomedical research and brought about the close connection of medical schools and universities. The new report wishes to bring research on to the campus and concentrates on the methods for the delivery of health care outside the medical schools and their own hospitals.

The immediate focus of the Carnegie Commission's concern is the present critical shortage of all levels of medical personnel. Roger Egeberg, Assistant Secretary of HEW has put it at 50,000 physicians 200,000 nurses and 150,000 technicians. The fact that there are at present 46,000 graduates of foreign medical schools practicing in the U.S. amounting to 15 per cent of all physicians is, of course, hard evidence that the native supply is insufficient. So too is the long working week of the typical doctor.

The chief bottleneck in the system is, of course, a shortage of places in medical schools which habitually turn away half of their applicants. An equally formidable barrier to talent the cost of medical education, has put the ambition of a medical career largely beyond the reach of students that come from poor families. Nearly two-thirds of medical schools in 1967 reported that most of their students come from families with incomes of \$10,000 or more. The Commission believes that an attainable and desirable goal is to increase the production of physicians from 10,800 to 16,400 by 1978. Together with an infusion of 13,000 more foreign doctors by 1977 it should be possible to raise the number of physicians per 100,000 population from 147 to 161 by the end of the decade. Another problem to be overcome is the dropout in medical schools with amounts to 10 per cent.

The extra 5,600 places in medical schools can be achieved by reducing from 4-3 years the

course between B.A. and M.D. degree by increasing the average class size in the medical schools to at least 100 and by establishing 9 new medical schools in addition to the 107 existing schools and 27 under development. The switch from 4-3 years is to be affected by straightforward revision of the curriculum by cancelling much of the summer vacation and by demanding higher standards of students on entering the M.D. course. The Commission also follows the AMA in approving the elimination of the internship year. With these changes the production cycle for doctors would be reduced from 8-6 years.

Another major change recommended in the structure of medical education is to shift the instruction in the basic sciences out of the medical schools and on the university campus. The courses should be arranged so as to increase the students time, allowing him after basic training in the health and related services, to pursue a variety of health related professions as well as medicine and dentistry. The Commission also calls for serious attention to be paid to student's wishes, in particular the demands for more flexible admission standards and for greater student participation in deciding what is to be taught.

To improve on delivery of medical services the Commission envisages a two tier hierarchy composed of campus based medical schools or University Health Sciences Centers and regionally based area health education centers. The role of the health science centers should have their education and research programs broadened to include concern with improving the delivery of health care and with innovations such as group practice and prepaid health plans. Obviously, this will require close co-operation with social science departments on the main university campus as with organizations and individuals in local communities. Each university health science center should be capable of handling the most complex medical problems but should also serve as a coordinating hub and reservoir for expertise for a system of institutions ranging from area health centers to rural clinics and group practice organizations.

The role of the area health education centers is to be satellites of the university health sciences centers. Their educational program would be developed and supervised by the health sciences faculty to which they were affiliated and they in turn would provide assistance to community health care facilities including the private physician. Turning to the financial support of education, the Commission argues the case for increased involvement by the Federal government in underwriting the necessary improvements but should not be done at the expense of federal funds for research. Thus the support should be divided between research on the one hand and education on the other (see page 60 of *Science News*) in separate grants to the institution rather than to individual scientists.

The Commission's report has come at a time when health services are facing not one, but several different crises. In addition to the shortage of doctors and other medical workers medical schools in common with other academic institutions have suffered an abrupt decline in income, particularly from private sources. More than half of the country's medical schools have become eligible for special grants from the Federal Government. The cost of medical treatment increasingly concerns a public which is coming to regard health as a right. The national expenditure for health care amounts to \$60,300 million or nearly 7 per cent of the growth national product but little more than half of this is met by insurance schemes. The Commission's verdict "although the best medical care in this country is as good as any in the world, many Americans receive inferior care and some health needs go entirely untreated".

Accompanying the rising expectation of health care has been a shift in public attitudes towards doctors. According to a Louis Harris poll published recently 78 per cent of Americans have a high regard for their personal physicians although many nurture a long list of grudges against the profession in general. Whatever the causes of these feelings, the issues raised by the Carnegie report will certainly influence Congress when it reassembles. It is significant that much of the suggestions of the report with respect to extension of the influence of the medical school upon community hospitals and health centers is already being implemented in Connecticut.

There is widespread indication that the nation will soon adopt a National Health Insurance sys-

tem. The Commission states "we accept this prediction but with the advent of National Health Insurance the shortcomings in our methods of health care delivery and the critical shortage of our health manpower and facilities will become even more glaringly apparent. Unless we overcome these deficiencies the present crises in health care will appear to be a mere ripple in comparison with the mounting waves of problems to be faced when financial barriers to health care are lowered. The inference is clear, go slow and watch your step.

L.H.N.

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Experiments on Cancer: The Role of the Cell Surface in Cell Multiplication

Normal cells in tissue culture stop growing when they have reached a confluent monolayer. Such cells are apparently sensitive to growth control by a mechanism which is unknown. These same cells can be virally transformed so that they will grow past the monolayer stage. They may therefore be considered to have lost this type of growth control. Stated in another way, normal cells are inhibited from growing by contact with other cells, this phenomenon is termed contact inhibition. If the mechanism of growth and nongrowth is mediated by the cell surface, the question arises in which way could it do this?

Burger and Noonan have explored this aspect of the transformed or malignant cell. They first tested normal cells for receptor sites for certain agglutinins one of which is concanavalin A and found none. However, when they treated the normal cell lightly with trypsin they rendered it transformed. It began to grow and stopped only when the cell restored its original surface, at which time it recovered its contact inhibition. On the other hand, if they took the transformed cell and treated it with concanavalin A this agglutinin seemed to bind the new surface receptor sites and the cell ceased growing on contact exactly like a normal untransformed cell.



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*U.S. PATENT NO. 2,895,877

This observation led Burger and Noonan to consider whether the transformed or malignant cell had an abnormal surface and whether it could be converted to normal by covering the receptor sites of their abnormal surface with the agglutinin concanavalin A. First they transformed mouse fibroblasts with polyoma virus. Before transformation the cells stopped dividing after they had formed a monolayer. After transformation they continued to multiply even when the culture became very crowded and there are sufficient cells to form several monolayers. These cells always bind concanavalin A but are also killed by this agglutinin.

The authors task now was to find a chemical that would bind the open sites on the surface of the transformed cell but not injure it. Accordingly, they digested concanavalin A with trypsin. The fragment so produced retains the property of binding cells but cannot agglutinate or kill them. Transformed fibroblasts were placed at a low density and grown in the presence of fragments of concanavalin A and this brought about a reversion of the growth pattern of the malignant cell to that of normal cells. However, if the cover layer of concanavalin A is removed the same cells again begin to grow like the tumor cell.

Burger and Noonan propose a simple model to explain these results. They suggested that the normal cell surface contain certain glycoproteins which respond to contact inhibition and restrain their growth. They then suggest that the phytagglutinin receptor sites are part of a whole subsurface layer of the cell. In untransformed cells the layer is covered. In transformed cells whether it is a normal cell treated by trypsin or a cell transformed by a virus, the subsurface layer is transiently or permanently exposed. Fragments of concanavalin A bind to these exposed receptor sites and this covers the exposed layer and at least in a functional sense renders it "normal" as far as contact inhibition is concerned. Concanavalin A is one of about a dozen phytagglutinins or lectins, glycoproteins isolated from various plant seeds which bind to and agglutinate animal cells. Various such proteins have been available for several years but only recently as a result of the work of Burger and his associates at Princeton and of Sach's group at Rehovoth,² in Israel, they have assumed great importance to cancer researchers. The key observation was that the extent to which a cell

binds phytagglutinin is correlated with its sensitivity to contact inhibition in cell culture.

The authors suggest that a cell can only propagate and/or respond to short range chemical messages which lead to cessation of cell division, when these subsurface layers containing the agglutinin receptor sites are covered. Moreover a cell's permeability or lack of it to specific ions, nutrients or specific growth controlling factors may vary according to whether this layer is exposed or covered. Thus when the agglutinin receptor layer is exposed, the cells may not be able to recognize and respond to the mere presence of other cells. On the other hand, when the layer is covered then the social behavior of cells is restored.

Burger and Noonan's set of observations may be of extreme relevance to an understanding of cancer. It may in fact be a breakthrough in our understanding of the basic fault in malignant transformation. If a cancer cell differs from a normal cell in having lost its outer surface from whatever cause viral or otherwise, and this surface can be restored by nontoxic substances we are at the threshold of the solution of cancer.

L.H.N.

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Drugs And Vitamin D Deficiency

We are now beginning to realize that a variety of substances may cause enzyme inductions in the liver.^{1, 2} For example, patients who are treated with anticoagulants when they receive phenobarbital as well, are then found to require a higher dose of the anticoagulant to maintain the effect. This is because phenobarbital stimulates the enzymes in the liver that are concerned in the metabolism and breakdowns of the anticoagulant (enzyme induction). Conversely, when the barbiturates are stopped, increased anticoagulant effects may occur since the enzyme responsible for their metabolism cease to be stimulated. Similar results have been described for dilantin griseofulvin and digitoxin.

Liver microsomes contain enzyme systems which hydroxylate steroids thereby cutting short their biological activity. The administration of many drugs also increase the hydroxylation of

steroids. They include dilantin, phenylbutazone, chlorocyclizene and dicophane (DD^T and o,p'—DDD) These last 2 agents have been used to hasten the coagulation of cortisol in patients with Cushings syndrome.²

Dent³ now describes 4 patients with osteomalacia who had been receiving long term anticonvulsive therapy. In one, treatment was carefully monitored until final cure of bone disease by correcting the abnormal plasma levels of calcium phosphorus and alkaline phosphatase was achieved with high doses of vitamin D. They point out that the hypercalcemia which developed during treatment of epilepsy may theoretically tend to worsen the frequency of seizures and that plasma calcium levels of patients on treatment for epilepsy should be monitored at least in these patients receiving high doses of several drugs.

Another paper by Richens and Rowe⁴ describes the results in a survey of calcium metabolism in 160 epileptic patients in a residential center. They found serum calcium levels low in 22.5 per cent and a raised alkaline phosphatase in 29 per cent. The hypercalcemia was related to a high dosage of anticonvulsant drugs and to multiple drug therapy. The response to treatment with calciferol suggest that the disturbance of calcium metabolism was the result of Vitamin D deficiency. It is possible that the anticonvulsant drugs accelerate the breakdown of Vitamin D by liver enzyme induction. Apparently ethosuximide that is used in petit mal may not lower the calcium level.

The close relationship of total drug dosage and the serum calcium concentration in the patients reported by these two investigators was particularly striking. The results of studies in animals were highly suggestive that the metabolism of Vitamin D in man may be seriously affected by barbiturates and anticonvulsants. For example, phenobarbital significantly protects rats against weight loss, hypercalcemia, and renal calcinosis produced by high doses of calciferol. Tests of enzyme induction in man by measuring the amount of 6 beta-hydrocortisol excreted in the urine would be particularly revealing in this group of patients.

Dent points to the long delay in recognizing the association between osteomalacia and universally used anticonvulsant therapy. The often indefinable symptomatology of osteomalacia with its vague bone pains and muscle weakness is

always in danger of being overlooked. This danger must be increased in patients who suffer from mental or physical slowness which in severe epilepsy may be the result not only of the disease, but also of its therapy.

There are clinical lessons from these studies. In the first place every routine history should include a note of the drugs the patient has been taking. The reports show the value of determining the site of origin of the low calcium and raised alkaline phosphatase in the plasma. Then there is the lesson that diseases may be linked by therapy rather than by common etiology.

We should now realize the dangers of the long term administration of enzyme induction drugs. Some osteoporosis and osteomalacia may be expected to occur eventually. There are a variety of substances besides drugs that are also enzyme inducers such as 3.4 benzpyrene which is found in all cigarette smoke. Certain cooked foods contain polycyclic hydrocarbons which may also stimulate the metabolism of drugs.

There is here a fertile area for exploration by epidemiologists as well.

L.H.N.

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A New Sign In Gallbladder Disease

Many doctors have felt a palpable gallbladder in a patient with acute biliary colic which is impalpable when the attack subsides or on arriving at the hospital. Sir Zackary Cope, an authority on diagnostic problems of the acute abdomen which perplex the physician and surgeon has himself suffered recently from an attack of biliary colic and acute cholecystitis and has described it.¹ His trained senses recorded the early symptoms of the disease and the "cardiac link" symptoms. He makes a special point of the palpation of a tense painless swelling presumably the gallbladder during an attack of colic. As the attack subsided, the swelling disappeared and he attributes it to a temporary obstruction of the cystic duct.

Interpretation of the signs and symptoms of biliary disease may be difficult and inexact and certain popular fallacies exist. One attributes flatulent dyspepsia to gallstones whereas the facts show that gallstones and gallbladder disease are not always present and that the symptoms are more nearly related to underlying patterns of abnormal contractability in the stomach and duodenum.

Another fallacy concerns the occurrence of jaundice and fever without pain as being due to liver disease. In fact, thirty percent of such cases have been found to be due to stones in the common duct.²

Another fallacy concerns biliary colic. The pain is often believed to be cited over the position of the gallbladder in the right hypochondrium. In fact, it usually is felt across the upper abdomen sometimes even starting in the left hypochondrium. The embryological development of the biliary system is from the foregut which is a midline structure and symmetrically innervated. If cholecystitis follows the colic, then the pain will be felt in the right hypochondrium.

This symptom sequence may be compared to that in acute appendicitis when the central colicky abdominal pain (midgut) is then followed by the pain and tenderness in the right iliac fossa or where the appendix is lying. Because colic differs from appendicitis intestinal or ureteral colic in that the pain builds up in intensity over a period of few hours, it does not wax and wane.

Cardiac arrhythmias and pain are somehow linked in biliary disease but the mechanism is obscure. Continuous electrocardiographic tracings during an operation may show an arrhythmia when traction is applied to the gallbladder and cystic duct. In fact many patients lose their cardiac symptoms after cholecystectomy. Not only do symptoms subside, but even abnormal T wave in the electrocardiogram before operation may revert to normal after the gallbladder has been removed.

L.H.N.

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Searching For Breast Cancer

Early detection and definitive treatment are of paramount importance in patients with breast cancer. This was clearly shown in a study begun

in 1963 of 62,000 women randomly selected from the Health Insurance Plan of greater New York. Striking statistical differences were revealed in computed death probabilities between a control group that received standard medical care and a study group that was offered screening examinations and mammography. The probability of death within 3½ years after a diagnosis of cancer of the breast ranged from a low of 15.3 in the screened women to a high of 33 per cent in the control group.

To achieve detection with accuracy, speed, and convenience, Dr. Philip Strax at the Charles Guttman Breast Diagnostic Institute devised a four step testing procedure that costs the Institute twenty dollars for a patient and rarely requires longer than ten minutes for a single screening. The first step is an interview performed by a trained volunteer. Information is obtained on the educational background, demographic and ethnic background, menstrual, genital, breast and general family history.

The second step is a physical examination and general breast characteristics are recorded. The examiner notes whether he suspects malignancy, non-malignant mass, or non-malignant no-mass. He then recommends a one year recall, early recall, a biopsy or aspiration. This phase of the examination is performed by non-medical personnel under medical supervision.

Step three is roentgenography of the mammary gland with a Senograph which produces technically excellent mammograms with low radiation exposure (2-2.5 rads) by using non-screen film. As many as ten women can be screened in one hour. Soft tissue roentgenograms are made of the breast from two perspectives—lateral and craniocaudad. The data are recorded in the same manner as the clinical examination. For mobile screenings the Institute uses a 70 mm mammography device that can examine up to 20 women each hour. By this technique the woman is exposed to 1-1.5 rads. Any suspicious findings are followed up with conventional mammographic examination.

The final phase of the screening procedure is thermography. This produces a graphic representation of the infrared emanation from the breast. It is considered a backup technique. Thermography is performed last so that the patient's skin will have had sufficient time to cool. The data from the thermograph produces an instantaneous photographic image and include

impressions of normal or abnormal venous patterns, increased heat patterns or localized areas of increased heat. Areas of increased heat, it should be noted, do not necessarily correspond to the location of cancer. Thermographic findings do serve to alert the clinician to recheck the other findings.

It is significant that paramedical personnel work in all areas of the screening process. They have been found to be the perfect personnel to use. Most of them have undergone 1-2 months of on the job training at the Guttman Institute learning to operate the apparatus. The physician is essential for definitive diagnosis, but reading mammograms as part of the screening can be within the latitude of the paramedic. Dr. Strax's experience is that if the paramedic does anything he tends to overread findings but if he gets the cancer he does his job. Much physician time can be saved by using non-physician mammo screeners.

An offshoot of the Guttman Institute is the East Harlem Screening Center, supported by donations. Here the emphasis is on breast cancer screening performed by neighborhood residents for neighborhood women. Administrators, technicians, and health aids all live in the community and are well aware of its needs and peculiarities. By catering to the needs of the group they expect to achieve the primary goal which is good patient acceptance.

Dr. Strax has been encouraged in this idea by the excellent response to their mobile screening in depressed economic areas of New York City. This type of neighborhood screening center could well become a model for a national pattern of searching for breast cancer.

L.H.N.

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Bradykinin 1970

Certain polypeptides are known to have profound effects in the body. One is the well known angiotensin, a product of renin which causes peripheral vasoconstriction and hypertension. Another is bradykinin which has an opposite effect. The kinins have little or no effect upon the heart, but peripherally they are the most potent vasodilators known. They are formed when the enzyme kallikrein splits an alpha glo-

bulin into an amino acid polypeptide bradykinin. The kinins have now been synthesized in the pure form.

Pure formed, the kinins have a very short half life measured in seconds in which to act on tissues. They are rapidly destroyed by several plasma and cellular enzymes called kininase. Potentially 4-11 mg of bradykinin could be derived from every liter of normal plasma but fortunately bradykinin actually exists in the plasma in very minute concentrations to avoid tragic results that could follow release of large amounts. The factors which control plasma concentrations of the peptide under normal conditions are not known, but a number of immunologic reactions, the physiologic activity of leukocytes, the change in O_2 tensions in the blood and inflammatory states are associated with excessive production of kinins.

Small amounts of bradykinin produce four effects in adult man. One is direct vasodilation of arterioles and venules in action independent of the sympathetic nervous system. This dilation leads to decreased peripheral vascular resistance and increased cardiac output. There then occurs flushing, suffusion of the conjunctive, throbbing headache, systemic hypotension and increased capillary permeability. Minute amounts when injected intradermally will cause wheal formations. In this respect bradykinin is 15 times more active than histamine. Bradykinin also stimulates nonvascular smooth muscle i.e., bronchial constriction, uterine contraction, increased gastrointestinal tone and motility.

In the newborn infant it plays a major role in changing circulatory dynamics from the neonatal state. It constricts the umbilical artery and vein and the ductus arteriosus while dilating the pulmonary artery and vein. Thus the major physiologic role of kinins seems contained to changes in the circulation from neonatal to postnatal circulation.

There are a variety of pathologic conditions in man in which a pathogenetic role has been suggested for the kallikrein-kinin system. The evidence seems strongest showing that kinins play a role in inflammations and in states of decreased vascular resistance. There is much information about the role of kinins in the carcinoid syndrome. This syndrome is characterized by intermittent episodes of cutaneous flushing, diarrhea, intestinal malabsorption, cardiac valvular lesions, bronchial constriction and systemic

hypotension. In addition to showing over production of serotonin, several studies have shown that some carcinoid tumors synthesize and release kallikrein into the blood and that it is probably kinin which causes the intermittent flushing rather than serotonin whose concentration in the blood does not fluctuate. Melman¹ has analyzed the hepatic venous blood in a large number of patients and has demonstrated that the concentration of kinins are high enough and change appropriately to be the true mediator of at least some aspects of the flush. Tentative data may implicate the presence, if not a role for kinins during the acute phase of myocardial ischemia.⁴

In endotoxemia there is a decrease in the peripheral vascular resistance and the mean arterial pressure in the early phase of gram-negative sepsis. These events appear to be related to the appearance of increased concentrations of bradykinin in blood.³ It appears therefore that bradykinin may act as a trigger substance with or without histamine for the development of the vascular changes.

There is as yet no drug available to modify the kinin generating system. Drugs like chlorpromazine can antagonize the vascular effects. Corticosteroids and salicylates may inhibit the kallikrein activation system. Colchicine seems also able to inhibit formation of bradykinins but the mechanism is unknown.

The notable physiologic changes produced by the administration of minute amounts of bradykinin conceivably could be used therapeutically. Total arterial infusion of bradykinin may prove to be a convenient way to produce local vasodilating effects and prove to be a convenient way to alter regional blood flow. The trouble is that bradykinin has such a short half-life and rapid tachyphylaxis develops during its administration and its ability to increase capillary permeability also militate against its therapeutic value at present.

There are congeners which do have larger half-lives in man than bradykinin so that if the kinins eventually find a role in therapy, then electroin a vaso-active peptide isolated from the salivary gland of molluscs may finally be developed for use in man. It produces pharmacologic effects similar to bradykinin, but it is poorly metabolized and can produce prolonged effects.

The physician who is aware of these polypeptides and the mechanism for their antagonism is already capable of treating the rare patient with severe flushes in the carcinoid syndrome. In a positive sense, bradykinin might come to be used to assist in the closure of a patent ductus in the newborn.

Obviously the system is contributing to many common diseases such as endotoxemia myocardial infarction, specific aspects of inflammation. We will all be looking for appropriate therapeutic approaches.

L.H.N.

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Therapeutic Abortion By Medical Means: Prostaglandin E2

Several methods for the therapeutic termination of pregnancy are in use. Until the present, early pregnancy was thought best terminated by dilatation and curettage or by dilatation followed by vacuum suction. The vaginal operation for therapeutic abortion however is fraught with several hazards, including perforation of the uterus, hemorrhage, infection, and cervical incompetence as a result of stretching of muscles of the cervix. The likelihood of such complications increases sharply after the twelfth week and the procedure after twelve weeks of pregnancy is usually terminated by abdominal hysterectomy. This is certainly not an ideal solution because it is associated with an operative risk. Furthermore, the presence of a scar in the uterus may in future pregnancies render cesarean section the only safe way of delivery.

Other methods used for therapeutic termination of pregnancy include the intra-amniotic injection of hypertonic saline or the installation of abortifacient paste between the membranes and the uterine wall. The former tactic is usually employed after 14 weeks and although usually successful requires skill and experience. Recent-

ly however, there have been disquieting reports of several deaths following intra-amniotic injections of hypertonic saline.¹ The abortifacient paste can be used in early and mid-pregnancy but is also not free from risk and sudden death from embolism or vaginal inhibition has been reported.² Clearly therapeutic abortion is not a simple operation and no method of terminating pregnancy before term now exists which is entirely devoid of risk. A simple, safe and effective method for management of therapeutic abortion is highly desirable.

Medical induction would seem to be a more desirable approach to the problem. Karim and Filshie¹ have recently reported on the use of prostaglandin E2 infusion for therapeutic termination of pregnancy. They have found that 5 µg appears to be the optimum concentration needed to produce contractions of the uterus of sufficient strength and frequency to dilate the cervix and produce abortion. They infused as much as 40 µg per minute in normal male volunteers without producing any outward effect on the cardiovascular system nor does it produce any subjective side effects.

Karim and Filshie have previously reported the use of Prostaglandin F2 for therapeutic termination of pregnancy in the first and second trimesters of pregnancy. However prostaglandin E2 is also effective over the same gestational period but with one-tenth of the concentration. In the Prostaglandin E series only 4 out of 52 had diarrhea compared with 50 per cent incidence in the first prostaglandin F2 group. This suggests a more selective action of Prostaglandin E on the uterus and less effect on smooth muscle of the gastro-intestinal tract compared with Prostaglandin F2. The reduced incidence of diarrhea, apart from adding to the comfort of the patient, reduces contamination of the perineum during abortion.

It appears that the uterine activity produced by Prostaglandin E2 in the first and second trimesters of pregnancy is different from its activity at or near term. In the uterus at or near term Prostaglandin E2 in a concentration of 0.5-6 micra g/min produces normal labor-like contractions with increase in frequency and amplitude. The tone of the uterus does not increase. However, in the first and second trimesters of pregnancy Prostaglandin E2 5 micra g/min produces on the uterus an increase in tone as well as frequency and amplitude.

The results of Karim's series are very encouraging. Medical induction with Prostaglandin E2 appears to be effective even in the first trimester of pregnancy. It is simple, safe, and eliminates many of the hazards encountered with other methods used in the series of 52 patients. The large proportion were complete, needing no further surgical intervention.

L.H.N.

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How Well Does An Emergency Room Staff Handle Non-emergency Problems

It has been well documented that emergency rooms of many hospitals are being used by both the poverty and working classes for treatment of non-emergency conditions.¹ This, of course, brings up the question of the quality of the care they receive. Brook and Stevenson² have now reported the results on the patients by evaluating diagnostic processes and outcomes and therapeutic processes and outcomes. They used chart reviews and follow-up interviews. The patients were seen in the emergency room with non-emergency gastro-intestinal symptoms and referred to the X-ray department for further GI evaluations. The patients were complaining of subacute or chronic conditions and needed continuing medical assistance. They were initially seen by one of five medical interns who may then consult with one of two residents.

To arrive at an evaluation of the diagnostic outcome in this group of patients the authors used the following minimal criteria to judge adequate work-up. (a) completion of X-ray studies by the patient, (b) production of an X-ray film of adequate quality to eliminate treatable lesions, and (c) sigmoidoscopy of all patients who received a barium enema examination. By these criterias only 77 of 141 patients had an adequate work-up.

To receive proper treatment or further evaluation, the authors looked to find whether the patient had been given an appointment slip for a second visit. Thirty of 136 patients did not receive an appointment slip and of those who did only 51 out of 106 kept their appointment. Of

the 131 patients interviewed by the authors, 40 sought additional professional help from other sources of care. Only 37 out of 98 who had complete X-ray examination could recall being told the result or has any knowledge of the results.

The therapeutic process was evaluated by determining the minimal treatment, included for peptic ulcer disease, hiatus hernia, regular antacids or follow-up examination indicating such treatment was not appropriate. For gastric cancer recommending surgery was essential. For gall stones, surgery or reasons against it was required to be written on the chart. For diverticulosis or diverticulitis the criterion used was a statement that the condition had been explained to the patient or diet or stool softeners specified as necessary. With these criteria, only 37 per cent of patients with abnormal results appeared to be receiving appropriate therapy.

An analysis of longevity, loss of work, hospitalization or operation showed that substantial individual impairment existed at the follow-up interview. How much of this impairment was preventable cannot be determined. However, only one of nine patients with duodenal ulcer received therapy and his outcome was good. He missed less than one week of work and was asymptomatic at follow-up interview. Six of the remaining 8 missed more than one week of work and all 8 had retained the previous level of symptoms at follow-up study.

The final point was that out of this group of 141 patients, effective care was rendered for only 38 patients. The 84 patients who clearly received ineffective care included 60 not given an adequate work-up and the 24 with abnormal findings who had not been treated. Accordingly, in only 38 out of 141 patients (27 per cent) did the health system exert a positive effect.

By every criterion included in this study the individual care in non-emergency cases was both inefficient and inadequate. The interns performed incomplete physical examination and too few laboratory tests for these patients. A rewarding physician-patient relationship was lacking as indicated by the few patients who knew why they were scheduled for diagnostic X-ray studies or who learned the results of such procedures.

When responsibility shifted from the emergency room, appointment delays resulted in further inefficiency. It is indeed a paradox that the Gastrointestinal Clinic, the place where possibly

the best care for this group of patients was available also had the highest "no-show" rate (two thirds) which was probably due to delay in getting appointments.

Certainly a combination of these factors caused approximately one third of these patients to seek additional professional help, to experience prolonged symptoms and loss of work. Effective delivery of medical care was provided for in only one quarter of the patients. For the 141 patients studied one could conclude that the health care system was designed with the primary objective of processing test results, rather than provision of necessary services for these patients.

The question arises whether follow-up studies in different groups of non-emergency cases besides the gastrointestinal segment would also show similar inadequate care. If so, we must reappraise the fact as to whether emergency room as presently constituted is a suitable source of primary care for such residents as come to seek these services.

L.H.N.

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Environmental Degradation And Individual Responsibility

It might be bad in China with 700 million poor people but 700 million rich Chinese would wreck China in no time . . . It's the rich who wreck the environment . . . occupy much more space, consume more of each natural resource, disturb ecology more, litter the landscape . . . and create more pollution.
—Jean Mayer

We are face to face with an environmental crisis of great proportions. A century ago at almost any location in the United States potable water was no further away than the nearest brook or stream. Today there is hardly any

stream in the country that can safely satisfy human thirst without chemical treatment. An old mentioned satisfaction in lives of urbanites in an earlier era was a leisurely stroll in late afternoon to get a breath of fresh air in a neighborhood park or along a quiet street. Today, in many of our metropolitan areas it is difficult to find a quiet peaceful place to take a leisurely stroll and sometimes impossible to get a breath of fresh air. The quality of our environment has indeed changed.

Increasing population, increasing production, increasing urban concentrations and increasing numbers with median incomes have led to an environment that has taken a terrible beating in absorbing our filth and our refuse. As history evolved, the natural resources of the nation came to be controlled not by a few aristocrats but by many decisions. Decisions that ultimately degrade our environment are made not only by a few corporation boards and city engineers, but by millions of owners of our natural resources.

According to Moncrief, the present situation is characterized by three dominant features each of which mediate against a quick solution to the impending environmental crisis. One is the absence of personal moral direction concerning our individual behavior towards our natural resources. We think, for example, that a business executive who has embezzled funds deserves a prison sentence. This same executive is congratulated when he has succeeded in increasing profits even when he has also ignored pollution abatement laws in the process. The absolute cost to society of the second act may in fact be infinitely greater than the first, but we don't consider this.

One municipality can, without scruple, dump its effluent into a stream even though it may do irreparable damage to the resource and add tremendously to the cost incurred by downstream municipalities that use the same water. Each of us may be driving an inefficient motor which spews black smoke into the air the driver behind us is breathing. There appears to be an almost universal tendency to maximize self-interest and a widespread willingness to shift production costs to society to promote individual ends.

It is true that much of this behavior is due to ignorance. If our accounting systems were more efficient in computing the cost of such irresponsi-

bility both to the present generation and to those who will inherit the environment we are creating, steps would undoubtedly be taken to enforce compliance with measures designed to conserve resources and protect the environment. Furthermore, if the total costs were known we might even speculate that more voluntary compliance would result.

Government recognizing that it represents the interest of all its citizens has responded to date with dozens of legislative acts and numerous court decisions which give it authority to regulate the use of natural resources. However, because in a great measure we are all individually guilty, decisiveness to act has thus far been generally lacking. A very large proportion of the total citizenry is implicated in environmental degradation. The responsibility ranges from that of the board and executives of a utility who might wish to thermally pollute a river with impunity to that of the average citizen who votes against a bond issue to keep his taxes from being raised. The magnitude of irresponsibility among individuals and institutions might be characterized as falling along a continuum from highly irresponsible to indirectly responsible. With such a broad base of interests being threatened with every change in resource policy direction, it is not surprising although regrettable that government has been so indecisive.

Most people seem to direct the problem away from themselves by an abiding faith that technology can overcome almost any problem. This optimism is wishful thinking. There is strong evidence that much of man's technology has, when misused, actually produced harmful results, particularly in the long run. The reasoning goes something like this. After all we have gone to the moon, all we need to do is allocate enough money and brainpower and we can solve any problem. The fact is that we cannot continue to pollute and solve at the same time. We must cease being individuals and corporate polluters and use technology for constructive, not destructive ends. As Pogo said "we have met the enemy and they is us". It is people who are the cause of environmental degradation.

L.H.N.

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Knowledge From The Sleep Laboratories

In the last fifteen years sleep laboratories have sprung up after the discovery that rapid eye movement (REM) represents the dreaming phase of sleep. As a result, many old notions about sleep disorders have been given up and a more rational approach to disorders of sleep has developed. During REM sleep, which represents about 20 per cent of the total sleep, there is a wide variation of most neurophysiological and biochemical measures which for the most part reflect increased activity. For example, activity of individual neurons is increased to levels found during the waking state.

In a number of clinical conditions it is not uncommon for the individual patient to have an attack of his illness during the REM period. Of 39 episodes of nocturnal angina 32 were associated with REM period during which the heart rate increased ECG abnormalities appeared and after a few minutes the patient awakened with chest pain. Patients with duodenal ulcer may secrete as much as 3 to 20 times more gastric acid than normal patients, and this increase occurs during REM sleep.¹

Much light has been thrown on many types of sleep disorders formerly not understood or misinterpreted. One such is somnambulism, primarily a child disorder, which occurs not during REM but non-REM sleep. The child is not aware of his activity, has no critical skill, and is exposed to potential dangers. The immediate concern is to have an environment in which the child is protected from injury such as putting latches on doors, locking doors, and removing dangerous objects. Fortunately, children outgrow it in several years.

Pavor Nocturnus, or night terrors, is also a disorder occurring during REM sleep. The child is difficult to arouse. He shows excessive intense fear and emotion, but he is not awake.

Enuresis was formerly thought to be a form of hostile and dependent feelings expressed towards their parents. The facts as obtained from sleep laboratories contradicts this notion and has spared many children feelings of guilt and anxiety which endured long past the time the child has stopped bedwetting. No bedwetting occurs when the child is awake. It occurs, in fact, in non-dreaming periods, especially the first third of the night. Kales¹ was able to markedly

reduce the frequency of enuresis with Tofranil, which did not affect any phase of sleep, but acted peripherally to increase bladder capacity.

Sleep laboratory studies have shown that insomnia is associated with either inability to fall asleep, inability to stay asleep, or both. Studies of various hypnotic drugs have shown that some such as chloral hydrate, librium and valium do not suppress REM sleep, while others such as the barbiturates reduce the hallucinatory phase of REM sleep. One must be alert to the possibility of a largely unrecognized dosage in drugs that might suppress REM sleep. Then withdrawal of the drug may lead to "REM pressure" and the patient will develop a rebound of sharp increase in REM over the base-line.

If one is to withdraw a patient from the habit of a hypnotic it requires specific recommendation such as extremely gradual withdrawal at the rate of one therapeutic dose every 5 or 6 days, informing the patient that increased dreaming may occur and that these are reflections of physiologic alterations rather than pressure changes in the individuals psychic structure. If total withdrawal is difficult then choose a hypnotic which does not suppress REM sleep.

Kales looks for the following characteristics in a hypnotic drug. It should prove to be clearly effective for the induction or the maintenance of sleep or both. This effectiveness should not diminish quickly and thus necessitate increased dosage. The drug should produce only a minimum of alterations in the sleep stages. Sleep induction is enhanced by chloral hydrate. It lasts a short time and has no influence on maintenance. Flurazepam 30 mg enhanced both sleep induction and maintenance.

As a result of many studies by Kales they recommend treatment for insomnia first by gradually increasing exercise levels during the day. Patients are encouraged to regulate daily schedules and establish regular bedtime hours and not remain in bed if they cannot sleep. Maintain relaxing mental activity prior to bedtime, not complex mental activity such as studying, which can exacerbate an insomniac condition. Only occasionally are these suggestions successful in significantly alleviating the insomniac. Most often they have to be combined with specific drug therapy. Finally drugs must be prescribed in accordance with specific sleep difficulty.

A complaint of the depressed patient is in staying asleep. In fact many patients with this

difficulty turn out to be those with subclinical depression. Such patients, of course, need antidepressant medication throughout the day. Such medication increased sound sleep while it also improves sleep maintenance. In cases of acute insomnia, secondary to psychopathology or acute stress reactions, the psychopathology needs correction and situational stress needs alleviation.

Another condition currently involving hypnotic drugs is the treatment of insomnia which frequently occurs late in pregnancy. The neonate sleep is predominately of the REM type. If REM depressant drugs are administered to the mother this could decrease REM sleep in the fetus. At birth the newborn would in effect be "withdrawn". What such changes would do to the newborn is unknown, and represents an important area of study in terms of growth and maturation of the infant.

L.H.N.

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Physical and Psychological Dependence: Physical and psychological dependence rarely reported. If withdrawal symptoms do occur they may resemble those associated with withdrawal of barbiturates and should be treated in the same fashion. Use caution in administering to individuals known to be addiction-prone or those whose history suggests they may increase the dosage on their own initiative. Repeat prescriptions should be under adequate medical supervision.

Usage in Pregnancy: Weigh potential benefits in pregnancy, during lactation, or in women of child-bearing age against possible hazards to mother and child.

PRECAUTIONS: If sleeplessness is pain-related, an analgesic should also be prescribed. Perform periodic blood counts if used repeatedly or over prolonged periods. Total daily intake should not exceed 400 mg, as greater amounts do not significantly increase hypnotic benefits.

ADVERSE REACTIONS: At recommended dosages, there have been rare occurrences of morning drowsiness, dizziness, mild to moderate gastric upset (including diarrhea, esophagitis, nausea and vomiting), headache, paradoxical excitation and skin rash. There have been a very few isolated reports of neutropenia and thrombocytopenia; however, the evidence does not establish that these reactions are related to the drug.



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LABORATORIES

Division of Hoffmann-La Roche Inc.
Nutley, New Jersey 07110

SUMMARY OF PROCEEDINGS

HOUSE OF DELEGATES—SEMI-ANNUAL MEETING

Hartford, Conn.—November 19, 1970

MAJOR ACTIONS TAKEN

A. 1971 Budget

The budget for 1971, as prepared and submitted by the Council, was approved. As a consequence of inflation, additional staff personnel, proposed new activities and the expansion of existing ones, increased production costs of the Journal, etc., anticipated expenditures for 1971 will exceed those of 1970 by approximately \$50,000. For this reason, membership dues for 1971 were set at \$70—up from the \$50 that has remained constant since 1966.

B. Bylaw Amendments

Several amendments to the Bylaws were adopted as follows:

- (a) An amendment to Article VI, Section 1, making Alternate Delegates to the American Medical Association officers of the Society, and, thereby, voting members of the Council and the House of Delegates.
- (b) An amendment to Article X, Section 3(a), abolishing the Advisory Committee to the State Board of Examiners for Nursing. The Advisory Committee has not been called upon to meet with said Board of Examiners during the past five years or more.

C. Addresses and Reports

The Delegates received an address from the President, Morris A. Granoff, New Haven. The full text of the address is published following the conclusion of this summary. Reports were received from the Council, from the Chairman of the Board of Directors of COMPAC and from the Council's Ad Hoc Committee to Study the Problems of Abortion. Actions taken on the recommendations contained in these several reports are summarized by subject.

D. Resolutions

Adopted were:

- (a) Subject: Separate Federal Department of Health

RESOLVED: That the American Medical Association, in the public interest, strongly urge and bend its efforts toward the creation of a separate (single) federal Department of Health, whose chief officer would have cabinet rank.

- (b) Subject: Federal Controls on Medicare Payments

RESOLVED: That the House of Delegates of the Connecticut State Medical Society reaffirm its conviction that payment for physicians' services on the basis of "usual, customary and reasonable charges", in conjunction with peer review, has proven to be an equitable and fiscally prudent method of payment under the Medicare program in Connecticut; and be it further

RESOLVED: That the House of Delegates find that the extended "freeze" on Medicare payments, starting January 1, 1969, and the cutback in the prevailing levels of allowable charges from the 83rd to the 75th percentile, both imposed by the Social Security Administration and HEW, constitute discriminatory Federal price controls being applied uniquely and exclusively to the providers of medical services; and be it further

RESOLVED: That the House of Delegates express deep concern that, as a consequence of Federal price controls being imposed under a tax-funded program, third party payors operating in the private sector and, ultimately, the public-at-large, may be misled to the erroneous conclusion that the reduced payments currently allowed by Medicare do or should have application to the private sector; and be it further

RESOLVED: That the House of Delegates apprise the Board of Trustees of the American Medical Association of these resolves and urge the Board of Trustees to institute a maximum legislative effort to have discriminatory controls eliminated from the Medicare program.

Received as information and referred to the Committee on Professional Liability:

(c) Subject: Impartial Panels

RESOLVED: That the House of Delegates of the Connecticut State Medical Society request and authorize the CSMS Committee on State Legislation to study, develop and propose, for the consideration of the CSMS Council, legislative measures to be introduced at the 1971 session of the Connecticut General Assembly which would effect the following:

- (a) Establish impartial panels, composed of physicians and attorneys, in the various counties to which all cases of alleged medical malpractice (professional liability) shall be submitted for review, provided, however, that the decisions of such panels, as rendered, shall not serve to deny either party to the case the right to a court hearing, and
- (b) Require the loser in medical malpractice cases brought to trial to bear court costs.

E. Abortion Law Reform

Following an extended hearing held by a Reference Committee on a subject report of the Council's Ad Hoc Committee to Study the Problems of Abortion, the House of Delegates voted to act on the report of the Reference Committee as follows:

- (1) That the report of the Ad Hoc Committee to Study the Problems of Abortion be received as information.
- (2) That the Council, through the Committee on State Legislation, arrange to have a Society-sponsored bill introduced at the 1971 General Assembly which will embody the following points:
 - (a) Any abortion must be performed or brought about by a duly licensed doctor of medicine.
 - (b) Operative abortions should be performed by a duly licensed and qualified physician in a facility accredited by the Connecticut State Department of Health.
 - (c) Legal safeguards for consent must be included, such as: age of patient, husband or father, parents, guardians, etc.
 - (d) No abortions shall be performed after twenty weeks of pregnancy without qualified medical consultation.

(e) No woman shall be required to have an abortion.

(f) No doctor of medicine or accredited medical facility shall incur either civil or criminal liability for refusing to perform, assist in, arrange, or in any way facilitate an abortion.

- (3) That no member of the Society, nor any member of the staff of the Society, shall be required to play an *active* part in the implementation of the foregoing legislative recommendation.

F. Awards

Awards in recognition of past service to the Society were presented by President Granoff as follows:

Officers

David A. Grendon, Sharon

Treasurer 1967-70

Charles Polivy, Hartford

Councilor-at-Large 1969-70

County Councilors

Fairfield

Louis Rogol, Danbury

Associate Councilor 1964-65; Councilor 1965-70

James M. Grant, Westport

Associate Councilor 1968-70

Litchfield

Henry F. Farrell, Torrington

Councilor 1968-69

Francis P. Gallo, Winsted

Councilor 1969-70

New Haven

Stewart J. Petrie, Derby

Associate Councilor 1965-68; Councilor 1968-70

G. Introduction of Bylaw Amendment

Introduced by the Council, and tabled for action at the next meeting of the House of Delegates, was a proposed amendment to the Bylaws as follows:

Purpose: To allow the Speaker, or, in his absence, the Vice-Speaker, to arrange the order of business for meetings of the House of Delegates in such manner as to expedite the business of the House by taking into account the amount and nature of the business to come before the meetings.

Article V—House of Delegates

Section 12. Procedure. (Delete underlined words and add words in capitals)

Par. 1. Order of Business. (The following shall be the general order of business at all sessions of the House of Delegates:) ~~THE SPEAKER, OR IN HIS ABSENCE, THE VICE-SPEAKER, SHALL SET THE ORDER OF BUSINESS FOR EACH MEETING OF THE HOUSE OF DELEGATES AND SHALL HAVE PUBLISHED IN THE~~

AGENDA FOR THAT MEETING THE ORDER OF BUSINESS TO BE FOLLOWED. THE GENERAL CATEGORIES OF BUSINESS TO COME BEFORE THE HOUSE AT ALL REGULAR MEETINGS SHALL INCLUDE THE FOLLOWING:

- Call to Order by the Speaker
 - Roll Call
 - Report of Reference Committee on Credentials
 - Speaker's Remarks an Appointment of Reference Committees
 - Reading and Adoption of the Minutes of the Previous Meeting*
 - Introduction of Guests
 - Reports of Officers
 - Reports of Committees
 - Presentation of Awards
 - Old Business
 - New Business, and Reports of Reference Committees
 - Adjournment
- At any meeting, (the House,) by majority vote, THE HOUSE may change the order of business.

ADDRESS OF THE PRESIDENT

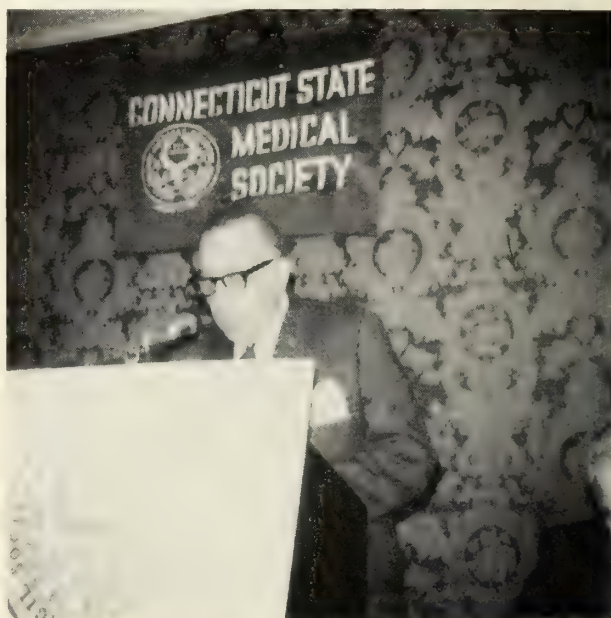
Morris A. Granoff, M.D., New Haven

As your President, I can report to the House that our officers are performing their duties most conscientiously in managing the affairs of the Society and that our able staff continues to perform at a high level of efficiency and dedication. The new assistant directors who joined us in June are presently learning their jobs and should become of increasing value to us in the administration of our program activities. In passing, I would reiterate that both the officers and the staff are available to the entire membership for assistance in solving problems or furnishing information on a wide variety of subjects.

Also, I welcome this opportunity to express my thanks publicly for the hospitable welcomes accorded me on my visits to the County Associations this past Fall. It was a most heartwarming experience, and I am looking forward with pleasurable anticipation to visiting with them again in the Spring.

The President of a State Medical Society is called upon frequently to attend various functions, including seminars and workshops, as a representative of the organization and its members. In reporting on these meetings, I sometimes feel like the Prophet Jeremiah, a harbinger of doom. The central theme of these functions seems to be one or another of

the problems in the health care field and center around the need for prompt correction of those problems. The leaders of the discussions all seem to stress the "crisis" nature of practically every aspect of health care and the mandate for their correction within a 3-5 year period—before government or some other agency steps in and imposes remedies. Frequently the problem is so complex that it is clearly beyond the physician's capacity to solve it alone, yet he is warned constantly that unless he solves it, dire things are bound to happen. Unfortunately the speakers at all too many of these functions are not very helpful in providing substantive suggestions as to how the problem under discussion at the moment should or could be solved, especially by action of the medical profession.



Morris A. Granoff, M.D., President of the CSMS addressing the House of Delegates.

Let me then mention some of the matters that I feel require our attention and to which we can make a contribution. One of these is Continuing Medical Education. My President's Page in the December issue of Connecticut Medicine will be devoted to a thumb-nail sketch of what needs to be done in this area and will offer some suggestions as to how we might start doing it. Medical knowledge is increasing at a rapid pace and ways must be found to bring this knowledge to those of us in medical practice so that we can apply these advances in the every day treatment of our patients.

You are all aware of the disturbing malpractice situation. The Society's Committee on Professional Liability is diligently studying the problem and

actively exploring ways to contain it. Here in Connecticut the major problem is one of cost. Elsewhere, physicians are experiencing difficulty obtaining professional liability insurance at any price. I doubt whether much can be accomplished in the near future toward reducing premiums significantly but I feel that a program can be devised which will



President Granoff presents silver bowl to David A. Grendon, M.D., Sharon, for past service to the Society as the Treasurer, 1967-1970. A similar award was presented to Charles Polivy, M.D., Hartford, Councilor-at-Large, 1969-70.



Louis Rogol, M.D., Danbury, receives from President Granoff citation for past service to the Society as Associate Councilor, 1964-1965, and Councilor, 1965-1970.

assure us of continuing satisfactory protection at reasonable rates. At the risk of being too simplistic, may I add that the best way to achieve stability in this area is to reduce the number of claims. Shortly, an educational program for the membership will be initiated on "How to Avoid Malpractice Actions." I hope it will prove effective as a preventive measure.

The subject of Medical Care is a very broad one and presents many challenges. We are faced with providing medical services to an increasing population that is demanding more and better care in the face of a shortage and maldistribution of physicians. Some changes will have to be made in the method of *providing* (I dislike the popular expression "*delivering*") medical care to meet current and future needs in terms of reasonable cost, quality, availability and accessibility. Multispecialty groups are being hailed by some as the panacea to accomplish these goals. However, those most experienced in this type of practice admit that it is not acceptable to many doctors and to many patients. They also state privately that only about 20% of the residents of an area will choose this type of medical care voluntarily when it is offered to them. Under such circumstances, it is difficult to understand why the so-called experts, both in and out of government, continue to promote the group approach so exclusively. It would be unfortunate if this promotional effort is successful because, by their own admission, clinic-type care is what up to 80% of the people *don't really want*.

The proposed role of ancillary health personnel in providing medical care has prompted a great deal of discussion—much of it only rhetoric. There is no question that properly trained allied health professionals can relieve the physician of many of the lesser duties he now performs. Everyone acknowledges the need for proper training of these ancillaries. However, when the discussion turns to exactly what duties they will perform, and who will be legally responsible for their performance, the discussants tend to become vague and say "this will have to be worked out". I attended the "Consumer's Forum" at the AMA Convention in Chicago last June. One of the points made repeatedly by spokesmen for the poor was their desire for personal care by *physicians* (as distinguished from medical students, interns and residents). When I echoed this desire during a discussion of the wider use of allied health personnel, I was told that the poor would not object to it because the rich would receive exactly the same treatment, thus eliminat-

ing discrimination. At a recent County Medical Association dinner, my companion, a prominent surgeon, mentioned the use of the "Felsher", a sort of assistant physician. He had been amazed to learn that the "Felsher" was the principal provider of medical care in the villages of Czarist Russia in the late 19th century. Let us insist that the "Felshers" of the USA, 1970, be properly prepared to carry out the duties which they will be assigned.

There is no easy solution to the problem of the maldistribution of physicians. The solutions suggested, including scholarships, loans and other inducements, have been tried in the past and failed. Yet the so-called "new" health care plan proposed by the New York City Administration, as described in the *N.Y. Times* (Nov. 15, 1970), advocates the timeworn, already proven unsuccessful, scholarship-loan method of attracting physicians to areas of shortage.

Cost, quality and utilization of medical care are areas which require our attention. The "Peer Review" mechanism has been demonstrated to be a most effective tool in this regard. The experience of the trial year of usual and customary charges under Medicaid in Connecticut was hailed as a model for the nation. The physicians of our state provided good medical care at reasonable cost with a very minimum of abuse. The success of the program was due to the reasonable charges made by the vast majority of practitioners and to the review activities

of the Medical Advisory Committee, a majority of the members of which were nominated by our Society. The essence of Peer Review is that one is judged by his peers or "equals". Thus physicians would review the cost, quality and utilization activities of physicians by community standards. It is also implicit that the prime reviewers would be engaged in the same type of practice as the one reviewed. Studies of over-utilization have shown that the physician is frequently not the guilty party. He may find it difficult to refuse to see a patient even when he thinks the visit may be unnecessary. Furthermore, patients have been known to visit more than one physician for the same complaint—sometimes even on the same day—and obtain treatment from each without the other physician knowing about it. While I cannot endorse the Professional Standards Review Organization, as advocated by the staff of the Senate Finance Committee, I feel that the Peer Review mechanism can be extended so that the providers *and* the consumers of health care would be subject to review by their peers, to the benefit of all concerned.

As many of you know, I have been deeply disturbed by some of the activities of the Connecticut Regional Medical Program. The Council has seen fit to reject two suggestions I have made toward resolving these problems and has elected to defer positive action until receipt of the long awaited report of an ad hoc committee charged with studying CRMP activities.

In 1968, CRMP submitted a Grant Request which the Council disapproved in part. After being reassured by CRMP that our disapproval stemmed from a misunderstanding of the several points at issue, the Council agreed to participate actively in CRMP operations. Since that time, CRMP has continued to pursue the paths outlined in the Grant Request of 1968. The items of which the Council disapproved, and about which it was advised it did not "understand", are being implemented in the exact manner that the Council questioned and found unacceptable. The program, as described in the 1968 Grant Request, follows closely the ideas of the Director of CRMP, as expressed in his earlier publications, and is not the result of a meaningful study of Connecticut's needs. Furthermore, it seems to be directed towards replacing private practice with hospital-based groups. In its subsequent Grant Requests, as recently as July 30, 1970, CRMP repeatedly refers to its "Grand Strategy" in this regard, as originally enunciated in its Grant Request of 1968.



Stewart J. Petrie, M.D., Derby, receives from President, Granoff citation for past service to the Society as Associate Councillor, 1965-1968, and Councillor, 1968-1970.

One item at issue is whether CRMP is violating the legislation creating the RMP's which forbids "interference with the method of delivery and financing of health care". Another item is the basic philosophy of CRMP, and the power vested in its "Core Staff" which is ever increasing. The leverage generated by the huge sums of money at its disposal could be dangerous. Time does not permit me to discuss in detail the *CRMP Newsletter* of Sept. 28, 1970 which contains excerpts from a talk by Dr. Harold Margulies, Acting Director of Regional Medical Program Services, (Washington, D.C.) on June 26, 1970. He looks upon the RMP's as a sort of "political-social instrument" and urges them to concern themselves with producing "the changes which we clearly need for an effective health care system". This is a far cry from what I think Congress had in mind when it created the RMP's—to improve the care of patients with Heart Disease, Cancer, Stroke and Related Diseases I urge you to read this Newsletter which one member of the Council has described as "frightening".



Thomas C. Points, M.D., Ph.D., Deputy Asst. Secretary for Health Services with HEW in Washington, D.C., addresses the House during their luncheon session on "The Federal Advocacy of Patient Centered Health Services."

The problems facing us today have to be solved. We cannot be ostriches and hide our heads in the sand and hope they will go away. These problems are also too important to trust to the planners.

It has been fashionable of late to talk about the team approach in the treatment of the patient. Today medicine is the patient and some of its ailments

are too complex for us to cure all by ourselves. We should use the team approach in this venture also, and join with other providers of health care services to find solutions. Where indicated, we should include our patients as well in these deliberations, because the remedies prescribed must be ones that satisfy *their* needs and attitudes. What I suggest is not easy or simple. It will require a truly cooperative effort by the various health professions to enter into serious, meaningful discussions. The participants will have to abandon their individual self-interests if it is to succeed. I expect that many sacred cows may have to be slaughtered.

In closing I recommend that this House of Delegates encourage the Council to continue to initiate consultations with representatives of other providers of health care, and, where indicated, with responsible representatives of patients, to discuss matters of mutual concern.

Placement Wanted

DERMATOLOGIST—30 years of age, Eligible with National Boards wishes solo type practice in a medium or small size community in Connecticut. (Preferably not too far from a large city). Presently in practice.

EMERGENCY ROOM—28 years of age, National Boards, wishes institutional type practice in a large or medium size community in Connecticut. Contact: Robert J. Riggen, M.D., 155 Poopoo Place, Kailua, Hawaii 96734.

GENERAL PRACTICE—61 years of age, wishes solo, group, institutional or industrial type practice in Connecticut. Presently in practice. Would prefer a position with a pharmacy firm or as a plant physician. Contact: Erich Russow, M.D., 71-18-69 Place, Glendale, New York 11227.

GENERAL PRACTITIONER—27 years of age, with National Boards, wishes group or associate type practice in a large community in Connecticut. Military obligation completed. Connecticut license. Available immediately.

INTERNAL MEDICINE—44 years of age, Eligible, wishes industrial type practice in Connecticut. Presently in practice. Interested in a position in medical electronics, research, development, testing, etc. Available immediately. Contact: Keith Lusted, M.D., 939 Oak Street, S.E., Salem, Oregon 97301.

INTERNIST—34 years of age, Eligible wishes solo, associate or group type practice in Connecticut. Connecticut license.

INTERNIST—32 years of age, qualified (and Eligible), with National Boards and Connecticut License, two years experience in cardiology wishes to join group or associate type practice in southern Connecticut. Military obligation completed.

INTERNIST—36 years of age, Eligible, wishes group or institutional type practice in a medium or small size community in Connecticut. Presently in practice. Prefer hospital-based group or full-time.

INTERNIST/CARDIOLOGY—30 years of age, Eligible with National Boards wishes associate type practice in a medium size community in Connecticut. Would like to associate with 1-3 other Internists. Military obligation completed.

INTERNIST—45 years of age, Certified, wishes group, institutional or industrial type practice in Connecticut. Available immediately. Contact: John G. Swadey, M.D., 132 Phillips Road, Pembroke, Mass. 02359.

NEUROSURGERY—35 years of age, Certified, wishes group, institutional or academic type practice in a large or medium size community in Connecticut.

OBSTETRICS & GYNECOLOGY—34 years of age, Eligible, wishes group or associate type practice in a medium size community in Connecticut. Military obligation completed in January 1971.

OPHTHALMOLOGY—31 years of age, National Boards, wishes solo type practice in a medium size community in Connecticut. Military obligation completed. Contact: Stephen H. Franklin, M.D., 555 E. William Street, Ann Arbor, Michigan 48108.

OPHTHALMOLOGY—29 years of age, Eligible with National Boards, wishes solo, group or associate type practice in Connecticut. Military obligation completed.

OPHTHALMOLOGIST—31 years of age, Eligible wishes to practice in Connecticut. Connecticut License. Extensive subspecialty training.

PATHOLOGIST/ANATOMIC—48 years of age, Certified, wishes institutional type practice in Connecticut. Presently in practice. Would prefer an academic center, since interested in routine work, teaching and research. Available early 1971.

PEDIATRICIAN—29 years of age, certified with National Boards, wishes group or associate type practice in a large or medium size community in Connecticut. Available shortly. Contact: Philip H. Friedman, M.D., 287 Dickman Drive, Loring AFB, Maine 04750.

PHYSICIAN — 27 years of age, with National Boards, desires part-time work, weekends, evenings, or vacation coverage. Connecticut license. Available immediately.

SURGERY—28 years of age, Eligible, wishes solo, group or associate type practice in Connecticut.

GENERAL AND THORACIC SURGERY — 48 years of age, Eligible, wishes solo, group or institutional type in a large or medium size community in Connecticut. Available immediately. Contact: Roger Paulin, M.D., 2115 Drummond, Suite 22, Montreal 107, Quebec-Canada.

SURGERY—42 years of age, Eligible, wishes group or associate type practice in Connecticut. Wishes to practice surgery with no general practice in an association or group. Available immediately. Contact: A. Sergie, M.D., 2035 Pine Street, Phila. Pa. 19104.

ANYONE INTERESTED IN THE ABOVE IS ASKED TO CONTACT THE PHYSICIANS PLACEMENT SERVICE, 160 ST. RONAN ST., NEW HAVEN, CONNECTICUT 06511.

Placement Opportunities

DOCTOR interested in student health service, Connecticut College, New London, Connecticut. Full-time or part-time. Contact Mary N. Hall, M.D., Director, Student Health Service.

EMERGENCY ROOM—Full time position in 250 bed Bristol Hospital. General Practitioner or specialist. To join 4 full time physicians rendering 24 hour medical coverage to 55,000 community. Excellent new facilities, nursing and specialty backup. Salary plus liberal benefits for full time. Call or write Richard P. Fredericks, Administrator, Bristol Hospital, Brewster Road, Bristol, Connecticut 06010. Phone 589-2000.

GENERAL PRACTITIONER.—The town of East Lyme is in need for two other general practitioners. Year round population of 11,000; a summer population of at least 15,000. A lovely community on the shore of Long Island Sound, is close to the Submarine Base and the Coast Guard Academy. There is an instant practice for a General Practitioner, and a fully equipped office and laboratory available for rent. 50 miles from Hartford, and 10 miles from New London. The Lawrence and Memorial Hospital in New London is a 327 bed modern hospital,

fully staffed and equipped, with nursing school and intensive care unit. A 40 bed addition is underway, with a new X-ray department. Contact: First Selectman, Town of East Lyme, P.O. Drawer 519, Niantic, Connecticut 06357. (203-739-6246).

GENERAL PRACTITIONER—presently hospitalized, 16 years lucrative practice, in search of immediate coverage, association or partnership. Rent-ed office fully equipped with three examining rooms, X-ray equipment, dark room. One senior nurse's aide and one receptionist immediately available. Centrally located town to 6,500, near large cities. To hospitals, with 24 hour emergency coverage nearby. For further information contact: Mrs. Sophy M. Graves (office nurse), Parum Road, Colchester, Connecticut. 537-2836.

OBSTETRICS & GYNECOLOGY—Excellent opportunity. Board eligible or certified associate needed. Early partnership. For further information contact: William P. Canty, M.D., 110 Church Street, Putnam, Connecticut 06260.

OBSTETRICS & GYNECOLOGY—A fourth ob/gyn, with military obligation completed, is wanted to join three Board-certified ob/gyns practicing in a Southeastern Connecticut town.

OFFICE/HOME combination for sale. Connecticut shoreline. Seven room office fully equipped including X-ray, fluoroscope, EKG etc. Dark room and laboratory. Excellent opportunity for immediate income from active, lucrative practice. Close proximity to Yale New Haven Medical Center and Middlesex Memorial Hospital, Middletown, Connecticut. Physician recently deceased. For details write to: P.O. Box 222, Clinton, Connecticut 06413.

PEDIATRICIAN to join two board certified Pediatricians with growing, well developed practice. New Office designed for three men. Excellent community and hospitals. Equal time off. Salary plus bonus first year; then partnership. For further information contact: Edward P. Wallace, M.D., 285 Broad Street, Meriden, Connecticut 06450, 203-238-1257.

PSYCHIATRIST—Full and part time positions available at progressive Mental Health Center. Located in central Connecticut, near large eastern universities and Metropolitan areas of Hartford, New Haven and New York City. Minimum requirements: 3 years approved psychiatrist, residency training and eligible for Connecticut license. Salary range \$23,227 to \$28,333, based on qualifications and experience. Complete tax-free maintenance at

nominal costs. For more information write: Superintendent Undercliff Mental Health Center, Meriden, Connecticut 06450.

CONNECTICUT—PSYCHIATRISTS AND PHYSICIANS to work in one of several newly developed specialized programs—drug dependence, alcoholism, geriatric rehabilitation, and general psychiatry. The setting is dynamic, decentralized and community-oriented. A training hospital with University affiliations with Wesleyan and Yale. Opportunity for private practice or consultation. Salary commensurate with experience and training. Starting salary range: Psychiatrist \$20,465-\$29,479; Physician \$18,826-\$27,482. Liberal benefits. Eligibility for Connecticut license required. Send all particulars in first letter including reference to: Mehadin K. Arafah, M.D., Superintendent, Connecticut Valley Hospital, Box 351, Middletown, Connecticut.

PSYCHIATRIST — Consultant full or part-time with Connecticut State Welfare Department. Medical assistance program. Connecticut license.

ANYONE INTERESTED IN THE ABOVE IS ASKED TO CONTACT THE PHYSICIANS PLACEMENT SERVICE, 160 ST. RONAN STREET, NEW HAVEN, CONNECTICUT 06511.

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Electrocardiogram of the Month: Coronary Artery Disease and Left Anterior Hemiblock

Yale-New Haven Hospital
New Haven, Connecticut

Prepared by
HYMAN M. CHERNOFF, M.D.
Associate Professor of Clinical Medicine,
Yale School of Medicine
Director, Dept. of Electrocardiography
Memorial Unit, Yale-New Haven Hospital

The left bundle branch takes off from the Bundle of His and then almost immediately divides into an anterior division and a posterior division. The anterior division then sweeps towards the base of the anterior papillary muscle while the posterior division reaches the posterior papillary muscle. Both divisions anastomose with each other through the Purkinje network. The anterior division conducts the cardiac impulse to the antero-lateral wall of the left ventricle while the posterior division conducts the impulse to the postero-inferior wall.

The blood supply of the anterior division is mainly derived from the anterior descending branch of the left coronary artery while the posterior division derives its blood supply from both the right and left coronary arteries. Narrowing or occlusion of the anterior descending branch of the left coronary artery may, therefore, lead to ischemia of only the anterior division and result either in a delay in velocity of conduction or in complete block of conduction in this bundle branch. In either case, the excitation of the antero-lateral wall of the left ventricle will be late and the vectors from this region being unopposed and directed to the left will cause a marked leftward shift in the mean frontal QRS axis. The later excitation of this wall also prolongs the QRS interval up to about 0.02 sec. above what it was before. Such impairment in conduction in the anterior division of the left bundle is referred to as left anterior hemiblock. It may be transient, intermittent, or permanent.

Below are a series of tracings obtained from a patient following onset of severe substernal pain and who exhibited in her serial ECG studies evidence of an injury to the anterior wall accompanied by intermittent left anterior hemiblock.

Tracing A was obtained during a previous admission on 12-20-69 and is essentially within normal

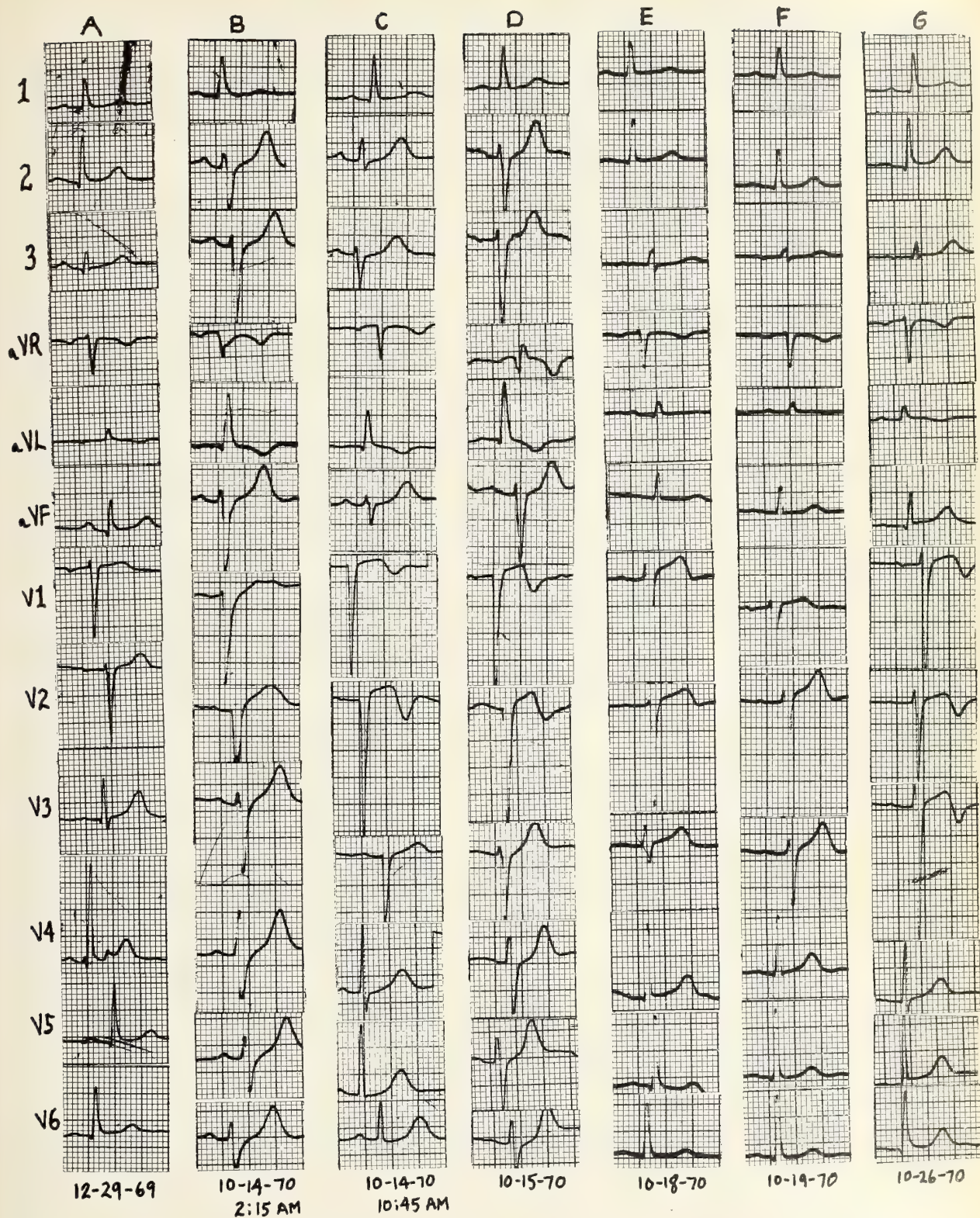
limits. The QRS interval measures 0.08 sec. and the mean frontal QRS axis is about plus 45 degrees.

Tracing B was obtained shortly after onset of chest pain at 3:45 A.M. on 10-14-70. The QRS interval is now prolonged to 0.10 sec. The mean frontal QRS axis has deviated leftward to about minus 45 degrees. There is loss of the R-waves in lead V2 and an increase in amplitude of the T-waves in the chest leads, changes suggesting recent anterior wall injury accompanied by left anterior hemiblock. In tracing C, taken at 10:45 A.M. on 10-14-70 the marked left axis deviation has subsided. The mean frontal QRS axis now measures about minus 10 degrees and the QRS interval is back to 0.08 sec. Little or no R-waves are present from V1-V3 and there now is terminal inversion of the T-waves in V1 and V2. Although these changes suggest recent infarction of the anterior septal area, no enzyme changes characteristic of infarction occurred.

Tracing D taken on 10-15-70, reveals a return of the anterior left hemiblock. The mean frontal QRS axis has deviated to about minus 60 degree and the QRS interval is prolonged to 0.10 sec. QS complexes persist in leads V1 and V2 and there is terminal T-wave inversion.

Tracing E, taken on 10-18-70 shows subsidence of the left anterior hemiblock. The QRS interval is back to 0.08 sec. while the mean frontal QRS axis is now about plus 40 degrees. The T-waves are now upright in leads V1 and V2. Tracing F, taken on 10-19-70 exhibits little or no change. On 10-26-70 the patient had a recurrence of substernal pain.

Tracing G, taken on that day again reveals terminal inversion of the T-waves in V1 and V2 and in addition in lead V3, but without left anterior hemiblock. The enzymes now rose and thus confirmed the diagnosis of an intramural myocardial infarction in the anterior septal area.



Anesthesiology Grand Rounds

Yale-New Haven Hospital

Acute Respiratory Obstruction

Samuel M. Lerner, M.D. and Frederick W. Hehre, M.D., Editors
John C. Daniels, M.D., Discussant

Case Presentation

An 18 year old female was admitted to the Yale-New Haven Hospital for elective thyroidectomy. Three years prior to admission, she noted the onset of nervousness, increased sweating, hand tremor and exophthalmos. The thyroid gland was diffusely enlarged. She was treated with methimazole, but after one year developed symptoms and signs of hypothyroidism and her medication was changed to propylthiouracil and thyroid extract. She became clinically euthyroid with symptomatic improvement. However, the exophthalmos did not disappear and gland size increased. The decision was made to treat her surgically, and two weeks prior to admission, thyroid extract was stopped and therapy with Lugol's solution begun. Her medical history was otherwise negative.

Physical examination revealed a slightly obese young woman, 5 feet 7 inches tall and weighing 140 pounds. The resting pulse rate was 92 and the blood pressure 120/80 mmHg. There was slight exophthalmos. Sweating and fine tremor were absent. The thyroid was diffusely enlarged, and a 3 x 5 cm. nodule was noted in the right upper pole. The hematocrit was 44%.

A bilateral subtotal thyroidectomy was performed. The operation lasted two hours and 40 minutes. The anesthetic administered was halothane, nitrous oxide and oxygen. Vital signs were stable throughout; pulse rate ranged from 70-90 beats per minute and blood pressure 100-120 over 50-70 mmHg. She awoke promptly in the recovery room. There was no respiratory distress, and vital signs were stable. She was discharged to her floor at 12:30 P.M. without apparent problems. About 1:00 P.M. the patient complained to the nurse of tightness in the throat and difficulty breathing. The

nurse noted blood on the dressing and obvious respiratory distress and called the surgical house officer immediately. When he arrived minutes later, the patient was sitting up in bed, gasping for air, with her face purple and the neck greatly swollen. The house officer immediately opened the incision (to the limits of its width and depth), and 400-600 cc of blood was evacuated. Her respiratory status improved immediately and she breathed easily with minimal stridor. She was given oxygen by mask and returned to the operating room.

Upon arrival her face and neck were edematous and dusky purple. Her decreased respiratory exchange made endotracheal intubation an immediate necessity. There was stridor but no retraction. Blood pressure was 100/50 mmHg and pulse 140. She was very apprehensive, but cooperative. Orotracheal intubation under direct vision with topical anesthesia was attempted, but she coughed and gagged, with almost immediate airway obstruction, and was barely able to communicate that she could no longer breathe. Without further attempts at topical anesthesia, laryngoscopy revealed that the glottis was obscured by soft tissue which folded around the laryngoscope blade. The oro-tracheal tube was passed toward the glottis and guided into the trachea by the breath sounds. After establishment of a patent airway, the patient immediately relaxed. She was given thiopental 100 mgs and 0.5% halothane with 50% nitrous oxide and oxygen. A bleeding artery in the region of the left upper pole was discovered and ligated, and the wound closed. Upon completion of surgery, her pulse rate was 120 and blood pressure 120/60 mmHg. She received 1200 cc of Ringers Lactate and 550 cc whole blood.

The patient was taken to the recovery room with the endotracheal tube in place. The necessity for this was explained to her and she accepted it. Hydrocortisone, 100 mgs, was given intravenously,

From the Division of Anesthesiology, Yale University School of Medicine and the Department of Anesthesiology, Yale-New Haven Hospital, New Haven, Connecticut.

continued as 100 mg every four hours for four doses, then four times per day. She was placed in a steam tent and given meperidine and diazepam for pain relief and sedation. She remained in the recovery room for five hours and was transferred to the intensive care unit. At 11:00 P.M. her hematocrit was 34%. The edema and duskiness of her face and neck decreased significantly by the following morning, and she was extubated. She exhibited no stridor with normal or deep breathing, but she had barking cough and hoarseness. She remained in a steam tent another 24 hours. By the fourth post-operative day her hematocrit had fallen to 29%, but she was no longer hoarse. She was discharged on the sixth post-operative day. She has amnesia for the events that occurred on the day of operation.

Dr. Samuel M. Lerner: Acute respiratory obstruction after thyroidectomy may be caused by recurrent laryngeal nerve injury or by an expanding hematoma. Bilateral abductor paralysis may be recognized by the typical stridor which appears immediately after extubation. Respiratory obstruction due to hemorrhage may occur, as in this patient, suddenly and at any time in the post-operative period. When the patient emerges from anesthesia coughing or vomiting, the resultant rise in venous pressure may dislodge ligatures and permit bleeding and tracheal obstruction in the recovery room or on the ward. The skillful and prompt action taken in this case certainly averted a fatal outcome.

Dr. Daniels, would you discuss the management of acute respiratory obstruction?

Dr. John C. Daniels: Upper airway obstruction may be caused by edema, inflammation, tumor, or trauma to the tissues of the head and neck. The pre-anesthetic presence of airway obstruction or the likelihood of its immediate development after induction of inhalation or intravenous anesthesia make *awake* intubation the safest means of assuring a patent airway.

Awake intubation may be accomplished by nasal or oral approach, utilizing topical anesthesia or nerve block.

1) *Nasotracheal vs. Orotracheal Intubation:* Blind nasotracheal intubation requires less topical anesthesia, and is less likely to induce coughing and gagging. It is the method of choice in patients with large friable tumors; with extensive facial injury; in the presence of large, raw bleeding surfaces, and in any patient who cannot open his mouth for any reason, or, who will have his mouth wired shut post-operatively. In retrospect, nasotracheal

intubation might have been a better choice in the case presented here. The second episode of acute airway obstruction and the hurried intubation probably could have been avoided.

The orotracheal route is recommended in patients with blood coagulopathies, and in patients with fracture of the cribiform plate, nose, palate, or maxillae, and particularly if there is gross distortion of anatomy.

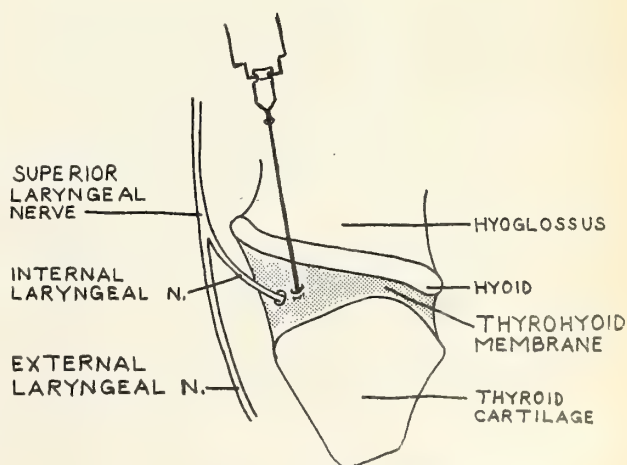
2) *Choice of Topical Agent:* Cocaine is an excellent drug to anesthetize the nasal mucus membrane, since it produces vasoconstriction in addition to local anesthesia. It shrinks the mucus membrane, providing more room and reducing the possibility of traumatic hemorrhage. The maximum recommended dose is 200 mg per 70 Kg individual.

Lidocaine and tetracaine are also suitable for topical anesthesia of the respiratory tract. Maximum doses recommended are 300 mg per 70 Kg for lidocaine and 80 mg per 70 Kg for tetracaine.

3) *Nerve Blocks:* Translaryngeal and superior laryngeal nerve block are useful techniques to provide anesthesia to the airway.

The internal branch of the superior laryngeal nerve can be blocked as it pierces the thyro-hyoid membrane just medial to the greater cornu of the thyroid cartilage. (Fig. 1) Bilateral injections of 2 ml of 1% or 2% lidocaine beneath the membrane produces anesthesia of the laryngeal mucosa above the vocal cords, the pharyngeal surface of the epiglottis, and the mucus membranes of the hypopharynx. None of the intrinsic muscles of the larynx are affected. This block decreases the

Figure 1



Superior Laryngeal Block

The correct plane lies between the thyrohyoid membrane and the pharyngeal mucosa and is identified by a "pop" as the needle pierces the membrane. Aspiration of air indicates the needle lies too deep and has perforated the pharynx.

amount of topical anesthesia required for orotracheal intubation, and reduces the risk of toxic reaction. Although the ability to cough, gag and vomit are decreased, the vocal cords can adduct and close the glottis to prevent aspiration of vomitus or foreign material.

Translaryngeal block is performed by injecting 2-4 ml of lidocaine, 2-4%, or tetracaine, 1-2% through a needle which has pierced the cricothyroid membrane and lies within the lumen of the trachea. Rapid injection causes cough, which spreads the anesthetic from the carina to and above the vocal cords. This technique produces no motor paralysis, but sensory anesthesia is widespread and coughing following aspiration of vomitus may be delayed or absent. The block is relatively contraindicated in the face of active bleeding or a full stomach.

Other contraindications include tumor, infection in the area of block and any further factor (edema, hemorrhage into tissues, trauma, etc) which distorts the anatomy or obscures the landmarks. Complications from translaryngeal block are rare but include broken needle, local infection, mediastinitis, hematoma, fistula formation and intractible laryngospasm.

4) *Extubation*: Patients who have been intubated and anesthetized for acute airway obstruction should not be extubated until complete consciousness and all reflexes have returned. If any obstruction remains, either potentially or in fact, the tube should be left in place or tracheotomy performed.

Tracheostomy

Tracheostomy is seldom indicated as *initial* treatment for establishment of a patent airway, but some exceptions include:

- (a) The presence of large, friable tumors which might be dislodged with instrumentation, producing further obstruction or uncontrolled bleeding.
- (b) The presence of abnormal facial configurations, either congenital or acquired, that make awake intubation impossible, and,
- (c) The presence of foreign bodies in the glottis which cannot be dislodged.

When tracheostomy is indicated for long term airway management, it should be performed after

the airway has been already established. This means prior insertion of an endotracheal tube. The airway is assured, and the surgery can be performed in an unhurried fashion.

Cricothyrotomy may be indicated as a temporary expedient if there is impending or actual asphyxia which is unrelieved by conventional means, or when no endotracheal equipment or instruments other than a knife is available.

Dr. Nicholas M. Greene: Why were the steroids given?

Dr. Daniels: Presumably she had edema secondary to bleeding into soft tissue.

Dr. Greene: Was it laryngeal edema?

Dr. Daniels: No. She had no reason to have laryngeal edema.

Dr. Greene: Another cause of acute respiratory obstruction after thyroidectomy is collapse of the tracheal rings. A patient with a large thyroid gland can be intubated relatively easily. But if the cartilaginous tracheal rings have been eroded by tumor, they will collapse when the patient is extubated at the conclusion of surgery. For this reason, patients with large retrosternal goiters or large goiters of any type should be extubated when they are breathing spontaneously under deep anesthesia. Deep anesthesia will permit reintubation if the trachea collapses and causes respiratory obstruction.

A rare cause of upper airway obstruction is an epiglottic cyst. Epiglottic cysts can produce complete obstruction in an anesthetized patient, although they rarely produce symptoms in the awake patient, and their presence is usually completely unexpected. This happened to me after about 45 minutes of uneventful general anesthesia with a mask and pharyngeal airway. The cyst suddenly became impacted in the larynx, completely obstructing the airway. The fastest way to solve the problem is to insert a curved laryngoscope in the pharynx and elevate the epiglottis, pulling the cyst out of the laryngeal orifice. Then the cyst may be punctured with a needle and the contents aspirated. When the cyst size is reduced, intubation can be easily accomplished. But by this time, as in my experience, you usually remove the upper two incisor teeth.

Medical Grand Rounds

The Infiltrators—Nematodes

Martin E. Gordon, M.D.

The Clinician of today has numerous burdens. He must think of many aspects of his patient's contemporary life.

The evening cocktail party may have been the source of his patient's jaundice, not from the alcoholic content, but rather innocently due to the drinks' attractively colored plastic ice balls imported from Hong Kong that contain the hepatitis virus.

Similarly, the origin of the acute "gastroenteritis" mini-epidemic in the hospital house staff may be due to the cadmium lined cocktail shaker, or worse, lead poisoning from gifts of modern handmade earthenware pitchers.

The college fraternity house serving of spaghetti and meatballs may ruin a Football Homecoming as flushing, nausea and collapse follow their ingestion—all due to the butcher's desire to use a red meat freshener—sodium nicotinate.

Some Chinese Food Lovers have baffled their physicians, convinced that their "C.R.S." symptoms were related to the impending doom of a cerebral vascular accident at best or a coronary occlusion at worst after an evening of Chinese egg rolls liberally sprinkled with the cook's enthusiastic use of Mono-Sodium Glutamate.

The extensive journeys of the Modern Traveler may lead to a high percentage of parasitic infestations, yet the latent symptomatic period often adds to the diagnostic frustration of the unwary clinician as many trips are over and forgotten in this prolonged period.

The Emergency Room presentation of the patient with acute abdominal pain may alert some to test for porphyria but few of us interrogate the patient as to fish ingestion. Knowledge of the Herring nematode and "Anisakiasis" might prevent a needless laparotomy—or awareness of the fluke *Clonorchis senensis* may lead to earlier diagnosis of

the baffling biliary or pancreatic tract obstructions its infection causes.

Obscure fever and myocarditis may have appeared after a successful Canadian hunting trip. The patient can hardly be expected to volunteer the history of ingesting a bear steak which he incompletely cooked over a campfire and to diagnose his own case of Trichinosis.

The puzzling itching of the young patient with a diffuse urticarial rash may be due to his recent summer trip in obscure areas of the world and caused by strongyloidiasis, but how many of us inquire about the lake exposures in Iowa where swimmer's dermatitis is prevalent? A few salient facts resolve the mystery—namely:

50% of the snails tested in Iowa are infected with the cercariae of avian *Schistosoma*. These cercariae emerge from the infected snails at the light-sensitive time of 5:30-6:30 a.m. Their mucous secretions permit surface floating and they may be wind-blown for long distances whereupon the cercariae seek out and penetrate the sebum of the unlucky swimmer's skin.

Most of us were happy to shed the need to memorize those dull life cycle charts seen in protozoology yet it is of interest to know that over 2.2 billion helminthic parasitic infestations exist in the world today. While it is the most common disease in the world, intimately interwoven with man's rapid population growth in this Hungry World, parasitism remains a most shunned and neglected subject.

Modern research tools and techniques have unearthed a treasure chest of stimulating knowledge to the oriented and aware. Our jet-borne traveling patient who may be readjusting his own circadian rhythm to his recent flight may have a souvenir of his trip that is not present in his luggage which may have a circadian rhythm of its own.

It has long been recognized that a midnight to 6 a.m. blood sample will often confirm the presence of microfilariae when filariasis is suspected. Hawkins and others have further elucidated the

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Remarks made at Medical Grand Rounds, Yale New Haven Hospital, October 8, 1970.

cause of their to and fro nocturnal wanderings. The microfilariae are unusually sensitive to the high oxygen tensions of the peripheral blood capillaries and arterial bed. They remain dormant in the pulmonary arteries until the host's biological Time Marker recycles the circadian rhythm; in this case the temperature cycle of the host.

The biological purpose of Parasitic rhythms is seemingly to promote transmission of the parasite to a new host. The clandestine insect vector appearance of the blood sucking arthropod mosquitos seems synchronized with this maximum microfilaremia. Of interest, is the recent discovery of the chemical substances of the host's skin that lure mosquito biting in the high density microfilarial areas of the body. Volatile L-Lactic Acid seems to attract the anopheles. The mosquitos unknown sensing structure is so precise that it distinguishes the levo from the dextro form of lactic acid.

Few recall that a large percentage of the approximately 16 million Americans with trichinosis has occurred in the East—largely New England, and that most people will have ingested infected pork, at least 47 times during a lifetime.

Recent work has shown that the parasitized trichinous muscle fiber is *not* an inert degenerating structure as we recall from our pathology slides. A series of reciprocal chemical interactions occur as the larva initiate a rapid synthesis of RNA stimulated by information from the host cell. As the worm furnishes new chemical information to the genetic system of the host cell, RNA synthesis in the host cell ensues and the myofibrillar structure becomes disorganized. Synthetic capacities of the host cell are now directed to reconstruction of a cellular "home" for trichinella. Fiber metabolism is then diverted to maintenance of a new entity—no longer only a myofibril but part of a highly differentiated host cell-parasite system.

Study of parasitism offers something for everyone. The Researcher can use worms as system models—not only for study of membrane transport mechanisms, but to aid in better understanding of local immunity in many other diseases.

Dr. Jarrett in Glasgow has been able to show that some worm antigens induce marked mobilization of mast cells (mastoblasts or immuno-blasts of Damoshek) to the site of attachment. Histamine release and ultimately 5-Hydroxytryptamine may be partially responsible for worm rejection. This mechanism is probably accomplished by the vasocative amines causing a marked macromolecular leak localized to the worm site with the delivery of antibody.

The Gas Chromatographer has shown us that the volatile fatty acids given off by the anaerobic metabolism of some nematodes (*Trichinella spiralis*) may be detected in the patient's blood. This may soon serve as a diagnostic test for Trichinosis (e.g. n-valeric acid).

The Oncologists are presently studying the origin of the bladder cancers in the many patients with *Schistosoma haematobium* infections. Esophageal tumors have occurred from *Spirocerca lupi* infection in dogs.

The Virologists have become aware of the relationship between rickettsial and viral infections to "conveyor" nematodes, transmitting illnesses such as lymphocytic choriomeningitis.

The transmission of Toxoplasmosis via blood transfusions must now be a new concern.

Many lessons are to be learned from the ubiquitous creatures about us. Let us turn more frequently to the Nematodes in their Silent World and wonder at their biological efficiency and at how often they must have deceived us as our patients presented themselves with signs and symptoms that we failed to recognize.

REPORT ON HOSPITAL COSTS

At its October 29, 1970, meeting, the Council voted to publicize the report of the Ad Hoc Committee to Study Hospital Costs and Related Matters. This report which was originally submitted to the Council in June, 1970, had been referred to the Committee on Hospitals for joint discussion with the Connecticut Hospital Association's Council on Professional Practice. The Ad Hoc Committee, appointed in March of 1968, included Bernard A. Burnham, M.D., Waterbury, Chairman; Howard S. Eckels, M.D., Bridgeport; Henry F. Farrell, M.D., Torrington; Frederick B. Hartman, M.D., New London; Howard J. Lockward, M.D., Manchester; Edward A. Palomba, M.D., Somers; Stewart J. Petrie, M.D., Derby; and Leopold M. Trifari, M.D., Hamden.

The Committee on Hospitals in its report to the Council in October indicated that many of the observations made by the Ad Hoc Committee are presently under surveillance by the Committee on Hospitals or by the Connecticut Hospital Incentive Reimbursement Experiment, which is an arm of the Connecticut Hospital Association.

The Ad Hoc Committee to Study Hospital Costs in Connecticut, for purposes of convenience, considered all hospitals of the state as community hospitals, even though one of them, Yale-New Haven, merits special attention as a teaching hospital. For purposes of study, hospital functions were broken down into categories, corresponding to hotel-type accommodation, professional care, administration, education, etc. Figures covering costs in each category were furnished by the Connecticut Hospital Association. Since bare cost figures have no comparative value unless quality is considered also, members of the Committee were able to give an evaluation through personal observation. In addition to cost figures, information was obtained from a wide range of published experience on all levels of the local and national community, both the private and the government sectors.

Very little study was necessary to uncover the outstanding factor in the rising costs of hospital care: the cost of personnel. Competition for labor, from the unskilled to the specialized technician, between lay and health care institutions and between various types of health care facilities, and the rising living costs, have forced an ever-increasing percentage of the hospital budget to be allotted to wages and salaries. In addition, advances in medicinal techniques e.g. intensive care units, coronary care units, radioactive isotope units, have called for ever-increasing education and skills which must be paid for at corresponding rates. (An interesting revelation when comparing personnel costs in various state hospitals is that no economies are effected by the use of religious in certain hospitals. In fact where the cost of maintaining the religious order is added to lay personnel costs, the sick pay a premium in those institutions.)

It is further to be noted that even though certain institutions may be paying more in salaries in certain areas than are other hospitals, and that some indeed, are top-heavy in administrative and supervisory costs where economies could be effected, it is proper that pay scales should be equal within and without the hospital, and that increasing skills should be correspondingly compensated. The prospect then is for ever increasing personnel costs and ever increasing technology resource costs. We must therefore search, not for ways to reduce these costs since they cannot be, but to circumvent them, so that the average cost for the average patient might be reduced. The techniques for accomplishing this exist; they have been proven in actual use in many localities. It was surprising to find that only one of the Connecticut hospitals, Manchester Memorial, has put any of them in practice. Further, it was found that this was done only at the insistence of the medical staff. Peculiarly enough, resistance to innovation in administrative techniques comes from the hospital administrators who seem violently opposed to change, at least in those instances in which a personal confrontation has taken place on these proposals. These same administrators, it may be added, make the claim that doctors are responsible for increased costs by insisting on ever more expensive technology. We will examine some of the arguments more closely.

The technique which holds the greatest promise for reducing hospital costs is that which is usually called "Progressive Care". Quite simply it provides for the full range of hospital services for the most seriously ill, then reduces the amplitude of care as the patient improves, until as a convalescent he is provided a minimum of motel-type accommodation. The ambulatory patient goes to various facili-

ties, e.g. medication counter, laboratory, dining room; instead of being waited on in his room or ward. Depending on the illness and the response to treatment there may be two or three stages in between intensive care and convalescence. With each change of care, the patient is actually transferred and his daily rate is changed. Hospitals that have adopted this plan have changed physical plant or added convalescent type facilities. Such care would provide for present diagnostic admissions, with transfer to treatment units once a diagnosis was made and treatment recommended. No valid arguments against Progressive Care have been encountered. Such criticisms as have been heard are such petty ones as "There would be too much confusion in transferring patients" and "Visitors wouldn't be able to find patients."

The next technique which promises reduction of cost is the "seven day week." It seems reasonable that costly hospital facilities should be used all the time rather than remain idle over weekends, particularly when illness knows no time division. It should be obvious that effecting such change requires complete cooperation from the medical staff, so that full use of facilities will be made. It is the rare physician who does not work seven days a week. It is likely that little more than diagnostic facilities would be involved; perhaps such treatment areas as physical medicine, respiratory, and X-Ray, to mention a few. Invariably, the hospital administrator confronted with this suggestion will retort that he is unable to get any of his staff to work weekends. We do not expect staff to work seven days a week, but, it is perfectly feasible to get personnel to work weekends if it is made a condition of employment.

Another area in which there could be a saving of personnel is the modification or replacement of physical plant to a design requiring less supervisory, professional and maintenance workers. The traditional long corridor onto which rooms open is most wasteful. We are all familiar with the proliferation of maids, porters, aids, messengers, etc. who are running errands, fetching supplies, waxing corridors, and so on. What a contrast to the core unit where all the floor is under observation from a central control center; where supplies are received by dumbwaiter or pneumatic tube; where corridors are minimal; where countless steps of many people are saved each day. Even though the design is not new and had been well tested all over the world, the resistance to it on the part of hospital administrators and hospital architects is

as formidable as it is illogical. Arguments run to such flights as "You can't put patients and beds in pie-shaped rooms." "It is too difficult to build." "It doesn't look right."

In addition, the design is light, airy, and maximizes the utilization of land so that innercity sites can be considered. Furthermore, it is capable of utilizing every technological advance both within and without, for example, preformed and prestressed concrete for shell and floors; minimal maintenance interior floor and wall treatment—a must in order to conserve personnel.

Industry has lead the way in developing personnel saving technology which should be utilized in the hospital. Continuing Time—Motion—Cost studies should prove economical in promoting efficiency and in eliminating waste in the hospital as in the factory. The nature of the hospital demands a certain inefficiency. Certain highly trained personnel must be on hand even during periods of little or no need e.g. cardiac-care trained nurses. The routine general care functions can be as efficient as the routine functions in industry. The tendency to accretion of non-producers, i.e. those not directly connected with the patient care must be curbed. It is so often felt that certain time-consuming matters attended to by highly trained personnel might be done by those less highly trained—yet nothing is gained if the time so saved remains empty. As in any bureaucracy, forms and reports tend to multiply and vigil must be constant to weed them out. The committee has studied matters not directly related to personnel economy and offers recommendations on these as well.

A substantial part of the per-day hospital bed cost, varying from seven to fifteen dollars or more, subsidizes education of health-care personnel: nurses of various categories, interns, residents, laboratory technicians, X-Ray technicians, and more recently administration residents. Strictly speaking, the costs of this education are properly the responsibility of the whole community, not a burden to be added to the costs of illness. In the days when the doctor in training received no pay or at most a small pittance, and when the student nurse was exploited for her services on the wards, the cost to the patient was a good deal less than the services received. But today interns and residents are paid substantial salaries and spend fewer hours a week on the wards; student nurses spend little time in actual patient care; and in addition, in order to meet the the intense competition for interns and residents, many hospitals maintain costly

"Directors of Education" with their appropriate empires. In recent testimony before a Senate committee, Dr. Cherkasky, Administrator of the Montifiore Hospital of New York, who admits to being one of the foremost administrators of one of the "best" hospitals in the country, pointed out the injustice of this expensive addition to bed costs and then admitted that he has done nothing about it in his hospital. It is time that such costs be appropriately subtracted from bed costs and charged to educational institutions or endowment, or both.

Several of our hospitals are experimenting with convenience foods and have eliminated kitchens with their expensive personnel. The state hospital association has made a start toward group purchasing of certain supplies in which economies can be affected. Certain services can be provided by specialized contractors: laundry, cleaning, maintenance, etc. It is for each hospital to determine by its own needs and experience whether such services should be carried on internally or by contract.

It is evident that tradition must be cast aside if economies in hospital care are to be effected. The cost to the individual patient can be reduced only if hospital administrators are less rigid in their thinking, if they stopped blaming doctors for in-

creases in costs, if they stopped shrugging their shoulders and saying piously that nothing can be done about rising costs, and if they really felt some sympathy for the patient's pocket book. The trend, unfortunately, is in the opposite direction; adding expensive full time medical staff is one fashionable sign of the times; expanding expensive services is still another. It is easy to say that such things are forced on them by their medical staffs, yet it is well known that doctors have little, if any, voice in running hospitals. They are rarely represented on boards of directors or trustees. On the contrary, in the one community hospital in the state where medical staff insisted on innovations, there is a significant advance toward holding costs in line.

Changes must be made. The formation of a Hospital Regulatory Commission by the Connecticut Legislature is probably just the beginning of a ground swell of public opinion which will insist on a change. A take over of the voluntary hospital system by government is not the answer since that would just pile the cost of a government bureaucracy on top of present costs. It may remain for the medical staffs to enlighten boards of directors and to insist on the adoption of the techniques enumerated above.

New Film Available: DEPRESSION

Prepared as continuing education material, the program, titled DEPRESSION, is a three-part learning system consisting of a 30 minute documentary film in color, a monograph and a self-evaluation section. Produced by MEDCOM, Inc., and made available through Lakeside Laboratories, the entire program may be booked at no charge for hospital staff meetings, medical association meetings, nursing education, special training sessions, etc. Contact: Leonard R. Tomat, Assistant Executive Director for Educational and Scientific Activities, 160 St. Ronan Street, New Haven.

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Winged to Chicago on October 11th, your President and President-Elect attended the 1970 Fall Conference of the Woman's Auxiliary to the American Medical Association. A regional get-acquainted dinner was held Sunday evening. Each participant told something interesting about herself. Monday found breakfast conferences starting at 8:00 A.M. Mrs. R. C. L. Robertson, national president greeted the delegates. Ernest B. Howard, M.D., Executive Vice-President of the A.M.A. gave the keynote address. Dr. Howard stressed the need for manpower in the field of medicine saying the gap between services and the demand is wide. Health care teams trained by physicians are proving helpful.

"Food's the Thing—a Lifetime Affair" was presented next by Effie O. Ellis, M.D., Special Assistant for Health Services to the A.M.A. Nutrition is basic to health, and is a twenty year project.

1. We must know that wellness is more important than illness.

2. Each stage in life's development depends on the preceding stage.

3. Nutrition begins in the uterus.

4. Each human cell has a different nutritional need.

During pregnancy and first six-eight months of life malnutrition has a definite effect on mental development, until brain size is developed.

Number of fat cells are determined during first year of life. Development of fat storage cells does not cease until the age of twenty. Thus the first year of an infant's life is most important.

As wives of doctors we were urged to give particular concern to the health of our husbands. The American male at the age of forty years has a life expectancy of thirty-one and 7/10 years. Women outlive men by three years. An individual requires about sixty calories per hour. A man weighing one hundred sixty pounds might require fourteen hundred calories a day. Women should deduct ten per-

cent. Caloric requirements decrease with age. An interesting sidenote was: "It would take one mile to work off one martini." It is desirable to exercise to the point of breathlessness two or three times a week.

Every individual should have a full breakfast. If one does not have a breakfast containing fifteen to twenty grams of protein, by 10 A.M. blood sugar increases, and mental fatigue occurs.

A twenty to twenty-six pound gain in pregnancy is still considered desirable.

Many different projects were reported in the field of community health. Many communities have a program called "Homemaker's Services". This furnishes aid for the new mother, the invalid and someone recovering from illness in their own home. A mobile unit, called "Meals on Wheels" furnishes hot meals to shut-ins. The "Block Mother" plan gives an added security to children walking to and from school. In some suburban areas a "Tele Check" service checks on elderly people living alone. The "GEMS" is a pilot program to train baby sitters.

The Woman's Auxiliary to the Maryland Medical Society have sponsored a volunteer language team to interpret for foreign patients.

The panel on Safety or Disaster Preparedness stressed the fact that most accidents happen in the bedroom. They listed home accidents as follows:

1. Poisons.
2. Fall hazards.
3. Electricity.
4. Medications.
5. Fire.

Being prepared for safety:

1. Emergency medical identification.
 2. Emergency self-help courses.
 3. Directional sign campaign.
- Direct signs to emergency centers.

In Memoriam

Affinito, Thomas J., McGill Medical School, 1931. Dr. Affinito was a general practitioner in the Meriden area since 1934. He interned at Lenox Hill and Beekman Street Hospitals in New York City and was later affiliated with St. Raphael's Hospital in New Haven. Dr. Affinito was a member of the Meriden-Wallingford Alumni Association of Yale University, New Haven County Medical Association, Connecticut State Medical Association, and the American Medical Association, and had served as an attendant in surgery at both Meriden-Wallingford and the Veterans Memorial Hospitals. Dr. Affinito had been attending a medical seminar in Nairobi, Kenya, at the time of his death. He died November 8, 1970, at the age of 64.

Johnson, Carl E., Harvard Medical School, 1926. Dr. Johnson was an obstetrician and gynecologist in the New Haven area since 1932. He was an associate clinical professor of medicine at Yale University; an attending obstetrician and gynecologist at Yale-New Haven, St. Raphael, Griffin and Milford Hospitals; served as chief obstetrician and gynecologist at St. Raphael's Hospital; a diplomat of the American Board of Obstetricians and Gynecologists; a consultant to the Surgeon-General of the U.S. Army; Treasurer of the American Society for the Study of Sterility; and the author of several medical and scientific publications. In addition, Dr. Johnson was a member of the National Research Council Fellowship, the New Haven County Medical Association, the Connecticut State Medical Society, the American Medical Association, the New England Obstetrical and Gynecological Society, the American College of Obstetricians and Gynecologists, the U.S. Public Health Service from 1942 to 1947, and the Connecticut State Examining Board from 1948 to 1960. He died November 23, 1970, at the age of 72.

Robey, Nathaniel C., Yale Medical School, 1917. Dr. Robey was a psychiatrist in the New Haven area since 1919. He served in the U.S. Navy in World War I and in the U.S. Army in 1941. Dr. Robey was a member of the American Psychiatric Association, the Connecticut State Medical Society and the American Medical Association. He died in November, 1970, at the age of 76.

Tynan, James G., Tufts Medical College, 1942. Dr. Tynan was a general practitioner in the Waterbury area since 1944. He served in the U.S. Army

in World War II and was discharged with the rank of major. He was a member of the American Academy of General Practitioners and the New Haven County Medical Society. He died November 9, 1970, at the age of 54.

Zerkowitz, Frederick, Graz Medical School, Austria, 1922. Dr. Zerkowitz was a general practitioner in the Waterbury area since 1942, and served on the medical staff at St. Mary's Hospital in Waterbury. He was also a member of the New Haven County Medical Association and the American Medical Association. Dr. Zerkowitz died November 14, 1970, at the age of 73.

NEW BOOKS RECEIVED

Books received for review are acknowledged in this department and such acknowledgement must be regarded as a sufficient return for the courtesy of the sender. Selection will be made for review in the interests of our readers and as space permits. Books are listed with advance data supplied by publishers. Prices quoted are not guaranteed. For further information, address queries to the publishers.

Statistics In Biology: Statistical Methods For Research In The Natural Sciences, Volume Two. C. I. Bliss, Biometrician, The Connecticut Agricultural Experiment Station, Research Associate, Yale University. McGraw Hill Book Company, New York 1969. 639 pp. \$22.00.

Synopsis Of Anatomy: Liberato J. A. DiDio, M.D., Ph.D., Chairman and Professor, Department of Anatomy, Medical College of Ohio at Toledo, Toledo, Ohio; President, Pan American Association of Anatomy. The C. V. Mosby Company, St. Louis, 1970. 530 pp. \$17.75.

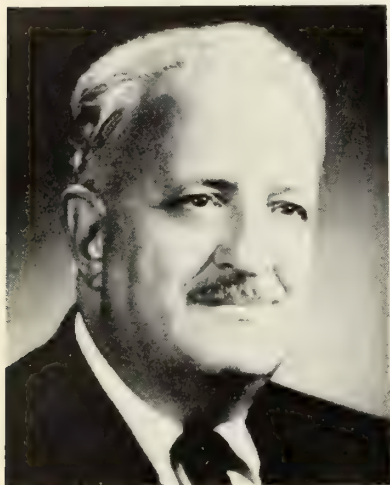
ATLAS OF OBSTETRIC TECHNIC (2nd ed.). By J. Robert Willson, M.D., M.S. 313 pp. St. Louis: The C. V. Mosby Company, 1969. \$19.75.

Reviewed by: NATHAN KASE

In his preface, the author announces his justification for the production of this new edition as the inclusion of new text rather than incorporation of new procedures or operations. This is clearly an unfortunate choice, not only because informational detail is not what the reader seeks when turning to a technical atlas as a reference, but also this judgment assumes the techniques of obstetrics have not changed. As a result, there is no note of the impact of ultrasound techniques on obstetrical diagnosis and no depiction of the vacuum extractor in obstetrical management. The use of Simpson forceps for transverse arrest and the Waters extraperitoneal section are retained, while the Barton forceps, the technique of suction curettage and the technique of amniocentesis (let alone the intra-amniotic infusion methods) do not appear.

An atlas of obstetrical procedures belongs in every hospital library as well as on the specialist's personal bookshelf. Despite its deficiencies, Dr. Willson's publication is adequate for almost all needs.

AROUND THE STATE



Kurt S. Pelz, M.D.

Dr. Kurt S. Pelz, executive director of the Masonic Home and Hospital of Wallingford, was honored recently by his fraternal brothers and colleagues when he was presented the Level Lodge Brotherhood Award in Hartford. The award recognizes outstanding humanitarian achievements.

The 1970 recipient, a native of Austria, became associated with the Masonic Home shortly after coming to this country in 1937. During his tenure, the institution has received full accreditation as a hospital specializing in the treatment of old age diseases. It was the first Masonic facility of its kind in the country to be so recognized and licensed.

Guest speaker at the dinner, Dr. Ira V. Hiscock, professor emeritus and former chairman of the Yale School of Public Health and Yale University Board of Health, is a friend and colleague of Dr. Pelz. In his comments Dr. Hiscock cited the work Dr. Pelz has done for the Society on both county and state levels. He is the immediate past president of the New Haven County Medical Association, a member of the CSMS Council since 1966, a member of the American College of Hospital Administrators, Chairman of the Council on Aging of the State of Connecticut, and a Fellow of the American Geriatrics Society.

Dr. and Mrs. Pelz live at 330 Harrison Road, Wallingford.



James N. Worcester, Jr., M.D.

James N. Worcester, Jr., M.D., of Greenwich, returned to Connecticut after spending a month in Indonesia, where he volunteered as a visiting specialist for MEDICO, a special services branch of CARE.

Accompanied by his wife, the orthopedic surgeon spent the volunteer term practicing his specialty and helping train four Indonesian surgeons who are serving residencies in orthopedics. Dr. Worcester, like the other visiting specialists, volunteer their time, services and pay for their travel and living expenses to augment the work of the regular MEDICO staffs.

Dr. and Mrs. Worcester reside at 20 Dayton Avenue in Greenwich.

New Haven County

The following excerpts from President Stewart J. Petrie's New Haven County Medical Association monthly Newsletter of December 3, 1970 are presented as items of general interest.

These are the areas in which greater county activity will be needed:

1. *Pollution problems* are an important area where we should probably be taking a greater lead in developing new programs as well as working with existing programs to help solve a problem which admittedly involves some areas other

than medical. The particular area in which we have pledged our help is the "Committee Against Lead Poisoning", because of the inherent lead poisoning problems in disadvantaged areas, and the need for diagnosis and treatment.

2. *The drug abuse problem* has been given much attention and lip service. Educational problems and studies have been undertaken, but I personally feel that we have not found a good method for effectively dealing with this matter. Our legislative efforts to promote the health education bill dealing with drug abuse among other health matters, was thwarted in the last legislature. We must and shall continue to press for this!

3. Improvement in Yale-New Haven County relationships still has a long way to go. Through the efforts of Dr. Pelz and Dr. Spiro, we are trying to learn how we can be mutually responsive to each other's needs in this "town-gown" area. . . . I certainly endorse all efforts to make this "one world" in both the area of mutual physician education and medical effort as well as in the understanding of the true purposes of organized medicine."

"A heated debate raged over the matter of by-laws changes defining disciplinary matters affecting members not meeting the attendance requirements of our present by-laws. On the one side, it was held that expulsion for non-attendance was too severe a punishment to fit the "crime" and that representatives of a free professional society should not enforce compulsion on their own members. Conversely, the good experience of other counties with disciplinary regulations regarding attendance was mentioned.

The fact that various agencies critical of organized medicine have commented upon our organizational policies not being representative of the practicing physicians, and that such policy endorsements can only be given by adequate attendance was also mentioned. Much rhetoric was directed toward the desirability of any attendance requirements at all. . . ."

"As a purely personal observation, I do appeal for some consistency of direction of policy from County members. While I personally spoke and voted against compulsory attendance requirement when first proposed sometime ago, I have worked long and diligently with others to develop realistic "discipline policies" mandated by this membership and voted in the above mentioned by-laws. Some of the benefits of good attendance are clear. Therefore, I respectfully suggest that we follow any new "mandates" for a reasonable time to accurately evaluate them. Certainly, we seem to have much more pressing activities than vacillation. I will certainly appreciate receiving your constructive advice and recommendations on maintaining good attendance at these important meetings."

Respectfully submitted,
William L. West, M.D., *Clerk*

Statement on Oral Medication

Although some flaws exist in the UGDP study, it clearly demonstrates that every effort should be made by the physician to control the maturity-onset diabetic with diet alone. Should this fail, treatment with insulin or oral hypoglycemic agents should be undertaken. If oral hypoglycemic agents are selected for therapy, the results of the UGDP study should be kept in mind. Therefore, the consideration of treatment with oral hypoglycemic agents should be secondary to the use of insulin.

In view of the dissemination of results of this study through mass media rather than through scientific medical literature, the Connecticut Diabetes Association wishes to go on record in reaffirming the fact that decisions regarding specific patients can be made wisely only on an individual basis by their respective physicians.—Connecticut Diabetes Association

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*Slinger, A.: Med. Times 94:150 (Feb.) 1966.

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conclude Goodman and Gilman

THE PHARMACOLOGICAL BASIS OF THERAPEUTICS
3rd Edition, page 522



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MEETING NOTICES

The information on this "notices" page is offered as a service of all specialty groups and allied health agencies in order to publicize postgraduate educational opportunities available to subscribers. The deadline for publication in Connecticut Medicine is the tenth of the month preceding, date of issue. Send copy to: Connecticut State Medical Society, 160 St. Ronan Street, New Haven, Connecticut 06511.

GENERAL

April 27-29—Tuesday-Thursday
179th Annual Meeting of the Connecticut State Medical Society

Hilton Hotel, Hartford, Connecticut
Theme for Sessions: Infectious Diseases

April 30-May 20

Spring Postgraduate Medical Seminar Cruise to the Mediterranean on board the "Raffaello"

Albany Medical College
Albany, New York 12208

CARDIOLOGY

May 13-15—Thursday-Saturday
7th Annual Cardiovascular Symposium
St. Francis Hospital, 114 Woodland Street, Hartford, Connecticut

INTERNAL MEDICINE AND SURGERY

September 15-June 1—Tuesdays
Lecture Series: "Medical Emergencies"
Lawrence and Memorial Hospitals, New London, Connecticut
Contact: Edward Gipstein, M.D., Director of Medical Education. (442-0711 ext. 361).

February 5-7—Friday-Sunday
Recent Advances in the Immunoprophylaxis and Chemotherapy of Infectious Diseases
Statler Hilton Inn, Tucson, Arizona
Co-sponsors: American Academy of Pediatrics and American College of Physicians
Contact: University of Arizona College of Medicine, Tucson, Arizona

INTERNAL MEDICINE AND OBSTETRICS

February 17-19—Wednesday-Friday
Medical Complications in Pregnancy
University of Southern California, Los Angeles, California
Contact: American College of Physicians, 4200 Pine Street, Philadelphia, Pennsylvania 19104

OTOLARYNGOLOGY

May 3-5—Monday-Wednesday
"The Vestibular System in Otologic Diagnosis"
New York Eye and Ear Infirmary, 310 East Fourteenth Street, New York, New York 10003

PSYCHIATRY

February 10—Wednesday 10:30 A.M.
John Donnelly, M.D.—"Examining the Mentally Ill Offender"
Connecticut Valley Hospital
Merritt Hall
Middletown, Connecticut

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Recommendations Made By The Carnegie Commission on Higher Education*

1. More opportunity for women and members of minority groups to become physicians, dentists and paramedical workers with the development of nine new medical schools.

2. Establishment of a National Health Manpower Commission to review the total spectrum of health care personnel.

3. The creation of a voluntary national health services corps to bring improved health care service to low income and rural areas. As an incentive for young doctors and dentists to participate the Commission recommended partial payment of financial loans.

4. An increase in Federal support for medical education by up to a total of \$1 billion by 1980. More equitable distribution of the financial burden for medical care between Federal and state governments.

5. State grants to private medical schools not only to support the recommended changes but also to relieve the present plight of the schools, some of which are reportedly near bankruptcy.

6. The adoption of uniform medical and dental school tuition fees in the range of \$1,000 a year. The commission recognized that the tuition represents just a fraction of the institutional educational costs which can be as high as \$16,000 a year for each student.

To meet this difference the Commission recommended grants of up to \$4,000 per student to institutions for training health professionals. It also recommended grants of equal amounts to needy students.—L.H.N.

* McGraw-Hill \$2.95

Containing the Plague

(*Nature*, 227, 7, July 4, 1970). The plague epidemic invaded the world in the 19th century in the holds of steamships. Now it threatens the world by container ships. Few people now die of plague because isolated outbreaks are checked by antibiotics and sulfonamides and the chain between rat-flea and man is broken by pesticides.

Natural reservoirs of the disease still exist in the United States, South Africa, the Soviet Union, and parts of South America. There is danger that freighting in containers may help to spread *Pasteurella pestis* since cargo packed in infected areas and not inspected en route or on arrival could contain plague infected rats and fleas. Then there is the fear that present methods of combating plague may lose their effectiveness as resistance mounts up.

To combat any resurgence of the plague the WHO committee recommends tighter methods of control and surveillance. The committee advises that an international reference center should be set up to provide facilities for the free international exchange of plague strains so as to keep a sharp watch for any signs of resistance to preventive methods in current use.—L.H.N.

Cleaning Solutions Cause Skin Pigment Loss In Hospital Employees

(*JAMA*, July 27, 1970, 535 213, No. 4) Germicidal disinfectants that contain certain phenols and are widely used in many hospitals, may cause skin depigmentation, says Dr. Guinter Kahn of the University of Colorado Medical Center. The individual's race and or skin color makes no difference. The biological mechanism of the depigmentation is not known.

Maximal pigmentation loss recurred at approximately one month after patch testing was begun. Return of pigmentation in these cases occurred one month later.

The compounds is used also in the manufacture of synthetic adhesives, the dermatitis occurs particularly in those who manufacture shoes and in automobile assemblymen.

In 1966 Russian investigators had made a somewhat similar report following use of certain phenols in factories that produce resins.

Phenols persist for a long time in the skin and are known not to be innocuous. When phenolic disinfectants and detergents are combined, the phenols penetrate the skin more easily and aggravate the problem.—L.H.N.

Early Arterial Thrombosis Seen In Gout Patients

(J.A.M.A. 213 544 1970). Persons with primary gout may develop early arterial thrombosis, according to Dr. Frank J. Viozzi, M.D. Dr. Viozzi, a fellow in rheumatology at Henry Ford Hospital, and his co-workers base their conclusion on a study of 280 gout patients at the hospital and persons of the same age groups surveyed in the Framingham Heart Disease Study.

The incidence of first myocardial infarction in both groups was highest in the sixth decade of life, but there was no significant difference between the gout patients and the Framingham subjects.

The picture was quite different in the younger age groups. Whereas 0.5% of the Framingham subjects suffered a first myocardial infarction in their thirties, the incidence for the same age group among gout patients was 14 times as high. In the 40 to 50-year-age group, the incidence of heart attacks among gout patients was seven times as great as among the Framingham subjects (0.9%).

The investigators believe the higher rate of thrombotic disease is related to increased serum uric acid levels.—L.H.N.

Noise And Man

(Lippincott, Philadelphia, 1969, Burns, William) Noise is yet another by-product of technical advance which has not been adequately controlled. Elimination of noise should be viewed as a part of the practice of preventive and industrial medicine, such as the provision of clean water supplies and the continued attention to such problems as atmospheric pollution, the chemical contamination of foods, traffic and industrial accidents, and the ill effects of cigarette smoking.

The many problems that arise from noise are annoyance, interference with conversation, leisure, sleep and efficiency, in particular, potentially harmful effects on hearing. Only in the case of hearing loss is a conceptual framework available in which to fit all the facts.

What part do economic consideration and population density play. To what extent do people become sensitized when they see themselves the victims rather than the beneficiaries of a noise-producing activity are still to be determined—L.H.N.

Before prescribing, please consult complete product information, a summary of which follows:

INDICATION: Relief of insomnia of varied etiology.

CONTRAINDICATIONS: Patients with known hypersensitivity to the drug.

WARNINGS: Caution patients about combined effects with alcohol and other CNS depressants. Caution against hazardous occupations requiring complete mental alertness, such as operating machinery or driving a motor vehicle shortly after ingesting the drug.

Physical and Psychological Dependence: Physical and psychological dependence rarely reported. If withdrawal symptoms do occur they may resemble those associated with withdrawal of barbiturates and should be treated in the same fashion. Use caution in administering to individuals known to be addiction-prone or those whose history suggests they may increase the dosage on their own initiative. Repeat prescriptions should be under adequate medical supervision.

Usage in Pregnancy: Weigh potential benefits in pregnancy,

during lactation, or in women of childbearing age against possible hazards to mother and child.

PRECAUTIONS: If sleeplessness is pain-related, an analgesic should also be prescribed. Perform periodic blood counts if used repeatedly or over prolonged periods. Total daily intake should not exceed 400 mg, as greater amounts do not significantly increase hypnotic benefits.

ADVERSE REACTIONS: At recommended dosages, there have been rare occurrences of morning drowsiness, dizziness, mild to moderate gastric upset (including diarrhea, esophagitis, nausea and vomiting), headache, paradoxical excitation and skin rash. There have been a very few isolated reports of neutropenia and thrombocytopenia; however, the evidence does not establish that these reactions are related to the drug.



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Dean's Page

Following the Flexner Report in 1910, there was a major adjustment in medical education with substandard schools closed, others merging with universities, and still others amalgamating to form stronger institutions. By 1930, there were 76 schools of medicine in the United States. One new school was opened in the 30's, two in the 40's and six in the 50's. Even with these developments there was concern that the existing resources for medical education were inadequate to meet the nation's needs and the Surgeon General appointed a consultant group on medical education.

A report entitled "Physicians for a Growing America" was delivered to the Surgeon General in 1959. It recommended that twenty-one new schools of medicine be developed, that two of these be in New England and one be in Connecticut. It recommended further that the number of graduates be increased from 7,000 to 11,000 by 1975.

In support of the need for more physicians and the recommendations of the Surgeon General's consultants, the Health Professions Educational Assistance Act was passed in September 1963. This, along with other funds from states and private sources, provided a major stimulus for developing new opportunities in medical education.

Between 1960 and 1970, sixteen new schools of medicine accepted entering classes. Two opened in 1970, six are scheduled to open in 1971, an additional four in 1972, and one in 1973. Two of these are in New England and one, the University of Connecticut, in Connecticut. The enrollment of freshmen in 1970 is approximately 11,000, in 1971 this will be increased and the number of graduates in 1975 will come close to meeting the recommendations of the Surgeon General's consultants. Circumstances, however, change, the population increases, and a new evaluation is necessary.

A new report entitled "Higher Education and the Nation's Health" was published in October 1970 by the Carnegie Commission on Higher Education. The recommendations of the Commission respond to current problems, are consistent with trends and in keeping with the mood of the period. This report has received the general support of the Association of American Medical Colleges and may well make a major impact on medical education and health care. Some of the major recommendations may be noted. The Commission views existing and developing medical schools as the base for university health science centers. It favors these being geographically distributed and recommends these be located in places "where the people live" so the health care system will be benefitted by their presence. Although the report favors a variety of models for university health science centers, it also supports the need for continued funding of biomedical research at the present level based on a fixed percentage of the gross national product.

The Commission feels that one of the existing weaknesses of medical education is that it largely ignores health care delivery outside the medical school and its own hospital. Therefore it recommends the development of 126 area health education centers to serve localities without a university health science center. "Each of these centers would be at a local hospital. The center's educational

programs would be administered by the university health science centers, they would train medical residents and M.D. and D.D.S. candidates on a rotational basis; they would carry on continuing education for local doctors, dentists, and other health care personnel; they would advise with local health authorities and hospitals; they would assist community colleges and comprehensive colleges in training allied health personnel; and in other ways, they would help improve health care in their areas. We consider this development of basic importance. . . . This proposal would put essential health services within one hour of driving time for over 95% of all Americans”.

The Commission recognizes the need for more health manpower and recommends an additional 50% increase in medical school admissions, the expansion of programs for physician's and dentist's associates and assistants, an acceleration of medical education so the undergraduate period is completed in three years and graduate professional education in three years, and the expansion of medical education without a proportional increase in costs.

In keeping with the general spirit of the Commission's recommendations, the School of Medicine of the University of Connecticut recognizes that the quality of patient care is enhanced by an association with education and that education, in turn, is improved through an association with biomedical research. All of these activities cannot be carried out in each of the hospitals of the state; therefore, the challenge is to develop cooperative relationships so available resources are not dissipated but organized in the best interests of the people. In keeping with this concept, the evolving Health Center of the University of Connecticut is developing affiliation and allied agreements with surrounding hospitals.

It is realized that the recommendations for expanded programs of the Carnegie Commission cannot be attained without increased expenditures. Federal support following the recommendations of the Surgeon General's consultants in the 50's increased the nation's resources for medical education. The assumption of a greater federal responsibility for medical education and the appropriation of expected state support for the new School of Medicine of the University of Connecticut will be essential if new advances are to be made.

John W. Patterson, M.D., *Dean*

PLEASE MARK YOUR CALENDAR

**179th ANNUAL MEETING
CONNECTICUT STATE MEDICAL SOCIETY**

APRIL 27, 28, 29, 1971

**Hartford Hilton Hotel
Hartford**

Connecticut Regional Medical Program

Henry T. Clark Jr., M.D., Director

A neighborhood health clinic which is helping to fill the gap in the delivery of health care to the 13,000 disadvantaged citizens and other residents of Hartford's Clay Hill-Vine area may in time serve as a model for providing health care to the urban poor on a fee-for-service basis. The clinic is supported by a \$30,000 grant for 1970 by CRMP.

The clinic, located at 1023 Albany Ave., opened its doors on October 1, 1970 and its use by neighborhood residents "has continued at a high level since," according to Evans H. Daniels, M.D., full-time clinic director.

In its three months of operation, the clinic's "primary personnel and staff objectives have been met." Dr. Daniels reported that "primary care is being rendered by four pediatricians who devote various amounts of their time at the clinic." Referral service, he added, has been initiated by the formation of a group of four cardiologists who have agreed to handle clinic patients. Other referral services are being formed.

The clinic is operated by Community Health Services Inc. (CHS), incorporated in 1969 as a non-profit medical organization to provide comprehensive care to the residents of the Clay Hill-Vine neighborhood. CHS is directed by community-oriented citizens and physicians, with the latter group slightly larger than the former.

Dr. Charles Polivy, who is president of CHS, said the clinic operates on a fee-for-service, pay-as-you-go basis, with special arrangements for those who cannot meet their bills. About one-half the patient load is expected to be on state welfare and about 15 per cent on city welfare.

The program aims ultimately, according to Dr. Polivy, at moving toward a prepaid group practice program. CHS, in addition to comprehensive medical service, will offer dental screening, mental health services, family planning programs and health education. Additional staff is being recruited to perform those functions.

Dr. Polivy made it clear that the clinic is not intended to replace present forms of medical care. "We are trying to enhance existing facilities and care by bringing needed comprehensive medicine and health care education closer to the neighborhood."

During its first year of operation, CHS expects to perform about \$75,000 worth of service, and its leaders predict billings of up to \$150,000 each year after that. The center will be self-sustaining except for research and special training projects; outside financing will be sought for them.

A number of community agencies and businesses have cooperated in the organization of CHS and have, together with CRMP, contributed over \$100,000 in grants to cover start-up costs.

The Board and the members of the Hartford County Medical Association have approved of the clinic.

FDA LISTS INEFFECTIVE DRUGS

The FDA has published a list of drugs that lack substantial evidence of effectiveness. Many of the products have been removed from the market either voluntarily or as the result of FDA action.

The National Academy of Sciences and the National Research Council reviewed the evidence of efficacy of approximately 3000 drugs on the market which had been approved from 1938-1962. No clinical trials or laboratory experiments were conducted.

Any physician desiring a list of these drugs may obtain a copy by writing:

Mr. Arnold Welch
DESI Project Office (BD-5)
Bureau of Drugs
Food and Drug Administration
5600 Fishers Lane
Rockville, Maryland 20852

Science News

The Human Eye As A Target To Analyse The Mechanism of Action of Substances

(*Triangle*. 9, 91, Nov. 1969. Turner, P.) The pupil is ideal for the study of action of cholinergic and anticholinergic compounds. Local administration of guanethidine to the eye is of value in at least two ophthalmic conditions. In Glaucoma 10 per cent guanethidine eye drops produces a fall in intraocular pressure in many patients. It has the advantage over cholinergic drugs such as pilocarpine in that it does not affect accommodation.

Hyperthyroid lid retraction is also relieved by guanethidine drops (10%) as is also the grittiness felt in this condition. At the same time it reduces the width of the palpebral fissure.—L.H.N.

National Growth Policy

(*Science* 169: 355, July 24, 1970) Leonard Garment, the President's Special Consultant on Environmental effects of technological change, has produced a report entitled "Toward Balanced Growth: Quantity with Quality".

The report examines the areas of population growth, environment, education, consumerism, technology assessment, basic natural science, economic choices and balanced growth. There are no conclusions on what ought to be done in these areas. Instead, the report outlines options open to policymakers and discusses the advantages and disadvantages of various actions. The report generally emphasizes the need for long range planning and for anticipating rather than reacting to crises.—L.H.N.

The Uniform Anatomical Gift Act After Two Years

(*New England J. Med.* 283:156, July 16, 1970, Sadler, A. M., Jr., Sadler, B. L.) Since March of this year the Uniform Anatomical Gift Act has been enacted in 49 states. Only Nebraska and Massachusetts have not yet adopted it. Thus, a nearly uniform legal structure for organ and tissue procurement has been accepted.

The Uniform Donor Card which was designed to comply with this act in every respect is now almost universally applicable.

It is now imperative that the medical and legal professions become fully aware of the law so that maximum utilization is possible.—L.H.N.



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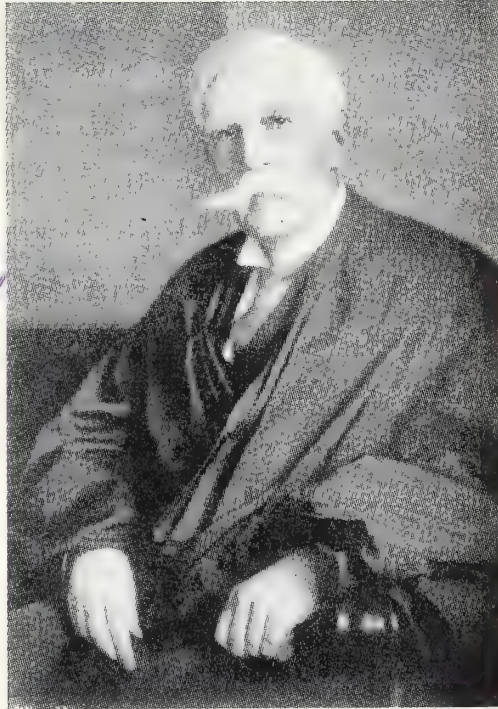
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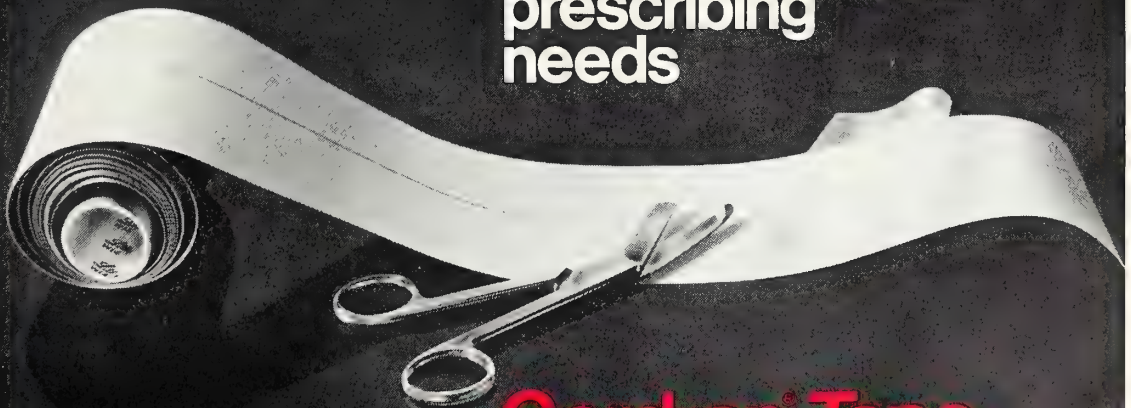
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Subscription rate for non-members \$15.00; Student-Members, interns and residents \$7.50; single copy \$1.50.

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THE PRESIDENT'S PAGE

The evaluation of the quality of medical care is difficult and when one attempts to measure the effect of a program on the quality of care the difficulty is compounded. As I indicated in one of my earlier President's Pages the parameters measured and used as guide lines depend on who is doing the measuring. The practicing physician may place great stress on accuracy of diagnosis and proper treatment, the administrator may stress utilization of hospital facilities and length of stay, the statistician may attach importance to the utilization of special services while the patient may be concerned with the availability and accessibility of the care and the way the care is provided, whether with consideration and compassion or not. All these areas must be taken into consideration when evaluating the quality of care.

At a recent meeting of the Advisory Board of the Connecticut Regional Medical Program (yes, I entered the lion's den) there was an excellent presentation of the University-Community Hospital Program of the University of Connecticut School of Medicine (commonly referred to as the "Third Faculty"). This program sponsors full-time Chiefs of Services in Community Hospitals for the purpose of improving the quality of care. Various speakers indicated that the quality of care was being elevated in the hospitals participating in the program but couldn't provide documentation. One speaker, a physician, stated that the records of the Medical Audit and Tissue Committees at his hospital indicated an improvement in the quality of care in that hospital. The others, principally administrators, voiced a "belief" or a "feeling" that the quality was being elevated. When pressed for details it was pointed out that the educational programs for the house staff were enthusiastically received. The full-time chief also seems to serve as a liaison between the hospital administrator and the medical staff. One administrator indicated that now the administration had someone to go to when it was thought that a patient might be receiving sub-optimal care, and that the full-time chief would look into the situation and remedy it if necessary. It was never clearly stated what the full-time chief does other than his involvement in the educational program for the house staff. When pressed for more details one speaker, a physician, mentioned involvement in utilization control and left one with the feeling that the full-time chief (whether of Staff in a small hospital or of Service in a large hospital) would also serve as a sort of "super policeman" in overseeing the professional activities of the attending physicians. I would hope he would also serve as a sort of Consultant with whom an attending physician might discuss a problem and receive some guidance or advice.

The question of the impact of the full-time physician on hospital costs (day-rate) and the manpower shortage was left unanswered. Since the hospital must pay the physician there must be some increase in hospital rates. One comment made was that since hospital bills are now paid by the Federal Government or Third Party Payors it did not seem to be important, since it was spread over a large group of subscribers or the general taxpayer. I must disagree with this concept most vehemently. At this time when Third Party Payors, such as Blue Cross, repeatedly ask for premium increases and the Federal Government is seeking ways to control rising health costs, such complacency is irresponsible. One

speaker implied that by using his "police powers" the full-time chief could improve utilization and thereby lower the total hospital bill. A concept not mentioned and which warrants some consideration is whether the full-time chief should be paid jointly by the hospital and the medical staff. If he is providing a service which both groups feel is needed and from which both groups derive benefit, they should be willing to pay for it. Furthermore, it would make him responsive to the needs of both groups and not just the employee of one. In this way both groups could have a voice in choosing him and in determining his duties, as well as utilizing his services. However, this would probably not reduce the financial burden on the patient.

The effect of the full-time Chief on the manpower shortage is self-evident. Increasing the number of physicians employed in full-time and administrative positions, must reduce the number of physicians available for patient care. Is this filling the needs of the people? The President of the AMA, Dr. Walter C. Bornemeier says "No." He has stated that 50,000 physicians could be released for patient care by abolishing some of the full-time positions. Dr. Roger Egeberg, the Assistant Secretary for Health in the Department of Health, Education and Welfare has repeatedly cautioned against creating more full-time positions, stating that each time one takes a physician working 60 hours per week and places him in a 40 hour per week job one may create a 20 hour per week deficit that some other physician may or may not be able to fill.

This all leads to the basic criticism that has been leveled at the Connecticut Regional Medical Program. It is not based on a study of Connecticut's needs but rather the implementation of the preconceived ideas of its staff. Many of these ideas were conceived prior to any awareness of such problems as the manpower shortage or the maldistribution of physicians and are being implemented in spite of these problems. The planners of the 1950's and early 1960's did not envision the manpower and maldistribution problems of 1970 and so did not plan with these in mind. Some programs have been praised as "forward-looking". Perhaps they are so "forward-looking" that they will solve the problems of the future but leave those of the present unanswered.

Morris A. Granoff, M.D.

179th ANNUAL MEETING
CONNECTICUT STATE MEDICAL SOCIETY

Hartford Hilton Hotel
10 Ford Street, Hartford, Connecticut

April 27, 28, 29, 1971

PRELIMINARY PROGRAM

TUESDAY, APRIL 27

ANNUAL MEETING OF THE HOUSE OF DELEGATES

TERRACE ROOM —:— MEZZANINE

Presiding: Kenneth F. Brandon, Hartford, Connecticut, Speaker of the House
Frank K. Abbot, Waterbury, Connecticut, Vice-Speaker of the House

The 1971 Annual Meeting of the House of Delegates is scheduled to be held in the Terrace Room of the Hartford Hilton Hotel, Hartford, on Tuesday, April 27, commencing at 8:30 A.M. Following luncheon, the House will reconvene to complete its business.

ROUND TABLE DISCUSSIONS

Members of the Society are invited and encouraged to participate in the Round Table Discussion or "Learning Panels". Four of these panels will be held on Wednesday, April 28, and four on Thursday, April 29. The subject, time and place for each is published in the Program that follows. The respective "Learning Panels" will be chaired by experienced physicians who will lead their groups, of not more than 15 participants, through in-depth examination of the topics assigned. Active participation in the group discussion will be limited to members who have pre-registered. (Registration Forms will be mailed to members with the Program of the meeting). Members who have not pre-registered will be welcome to attend the Panels as observers only, within the limits of available seating capacity.

WEDNESDAY APRIL 28

SCIENTIFIC PROGRAM

MORNING SESSIONS

8:30 REGISTRATION—Mezzanine

ROUND TABLE DISCUSSIONS

9:00-10:00 Fourth Floor in Rooms Designated

OFFICE MANAGEMENT OF COMMON INFECTIOUS DISEASES—Room 424

Group Leader: Ernest Atlas, Norwalk, Conn.

INFECTIONS IN THE TRAVELER—Room 420

Group Leader: Martin E. Gordon, New Haven, Conn.

THE VALUE OF THE LABORATORY IN THE MANAGEMENT OF INFECTIOUS DISEASES—Room 416

Group Leader: Adrian A. vanSoestbergen, New Britain, Conn.

WHAT TO DO UNTIL THE CULTURE COMES BACK?—Room 412

Group Leader: George Thornton, Waterbury, Conn.

10:00 INTERMISSION TO VISIT EXHIBITS

TERRACE ROOM

10:30 APPROACH TO THE PATIENT WITH FEVER OF UNKNOWN ORIGIN

Robert G. Petersdorf, Seattle, Washington

11:10 COMPROMISED HOST

Fred Rosen, Boston, Mass.

11:50 USE OF THE NEWER ANTIBIOTICS

Morton N. Swartz, Boston, Mass.

12:30 INTERMISSION TO VISIT EXHIBITS

1:00 LUNCHEON—Cities Rooms

AFTERNOON SESSION

TERRACE ROOM

2:00 BACTERIAL ENDOCARDITIS

Arnold N. Weinberg, Boston, Mass.

2:40 ANTIGENS ASSOCIATED WITH VIRAL HEPATITIS

Robert W. McCollum, New Haven, Conn.

3:30 INTERMISSION TO VISIT EXHIBITS

SECTION MEETINGS

EVENING PROGRAM

6:15 RECEPTION—Mezzanine

7:00 ANNUAL DINNER OF THE SOCIETY

Inauguration of the President

THURSDAY, APRIL 29

SCIENTIFIC PROGRAM

MORNING SESSIONS

8:30 REGISTRATION—Mezzanine

ROUND TABLE DISCUSSIONS

9:00-10:00 Fourth Floor in Rooms Designated

INFECTIONS OF THE HIPPIE GROUP—Room 424

Group Leader: George W. Lewis, Hartford, Conn.

COMPLICATIONS RELATED TO ANTIBIOTIC THERAPY—Room 420

Group Leader: Richard Quintiliani, Middletown, Conn.

NEWER VIRAL AND POLYSACCHARIDE VACCINES—Room 416

Group Leader: Martha L. Lepow, Hartford, Conn.

PULMONARY INFECTIONS—RADIOLOGIC EVALUATION—Room 412

Group Leader: Fred M. H. Ziter, Jr., Hartford, Conn.

10:00 INTERMISSION TO VISIT EXHIBITS

TERRACE ROOM

10:30 WHAT YOU SHOULD KNOW ABOUT URINARY INFECTIONS

Edward H. Kass, Boston, Mass.

11:10 MENINGITIS—NEWER CONCEPTS

Horace L. Hodes, New York City

11:50 PNEUMONIA—1971

Louis Weinstein, Boston, Mass.

12:30 INTERMISSION TO VISIT EXHIBITS

1:00 LUNCHEON—Cities Rooms

AFTERNOON SESSION

TERRACE ROOM

PROGRAM ARRANGED WITH CONNECTICUT SOCIETY OF AMERICAN BOARD
SURGEONS

Presiding: Gerald O. Strauch, Stamford

2:00 PREVENTIVE ANTIBIOTICS

John F. Burke, Boston, Mass.

2:45 THE SYSTEMIC BIOLOGY OF CRITICAL SEPSIS

Louis Del Guercio, Livingston, New Jersey

3:30 DISCUSSION—Questions and Answers

INTERMISSION TO VISIT EXHIBITS

SECTION MEETINGS

Foreword

It is fitting to devote an issue of *Connecticut Medicine* to medicolegal issues. Most physicians react with irritation at the increasing encroachment of the law into medicine, especially at malpractice. Every relation of a physician in his professional capacity with another person has its legal component. So we should not imitate the ostrich in our attitude toward the law. We should try to understand something about it, and the legal profession. The AMA Committee on Medicolegal Problems has prepared a course in medical law for medical students on the premise that "all physicians entering into practice need a well-rounded basic knowledge of the law as it applies to medical practice." For the most part this is not being done. Hospital directors of medical education should include it in their programs on education, especially in the field of malpractice. The joint committee of the Connecticut Bar and the state medical society tries to solve mutual problems, many due to lack of understanding.

Physicians seem to lack basic knowledge of their political and legal systems which would seem to be a necessary part of one's liberal education. Most cannot understand that there are in fact fifty different legal systems, which accounts for the fact that with the same set of facts one state court can differ from a neighboring state.

In a foreword to "Law and the Physician," by Carl E. Wasmuth, lawyer and physician and chairman of the AMA Committee on Medicolegal Problems, Harold L. Oleck, Associate Dean of Cleveland-Marshall Law School, says, "The day is past when a physician could get along without some knowledge of the law. Like everything else in today's complex world, the practice of medicine is becoming even more regulated and governed by law. This is true not only of medicine as a profession, but also in respect to the relation of physician to physician, physician to hospital, physician to patient, physician to organizations and corporations, and physician to the now-massive power of the state. It is little use to argue whether or not this should be so. We know that it is so. That being so, every wise physician should know the law that affects him. . . ."

Many medical journals include brief discussions of legal problems: "Law and Medicine" articles in the *JAMA*; *Citation*, a biweekly published by the AMA legal department; articles in the *New England Journal of Medicine* and *Connecticut Medicine*; and in *Medical Economics*. We may not like it, but the law increasingly hovers in the background of much of our practice.

J. ALFRED FABRO, M.D., *Guest Editor*

The Origin, Basis and Nature of Medical Malpractice Liability

Victor M. Gordon

Doctors—and their professional liability carriers—know how much more prevalent the medical malpractice suit has become in recent years than in bygone times; and, because of the incidence of such lawsuits and their increasing acceptance as part of the current scene, there is a tendency to take such litigation for granted, and perhaps to assume that the right and remedy have always been there.

This, however, has not always been the case. The doctrine of professional responsibility—and this includes not only the more obvious professions of the physician, surgeon, lawyer, engineer and accountant, but also other occupations requiring professional training or other education and experience to prepare one for a skilled trade—originated as an extension of an earlier formulated hypothesis of “the reasonable man” about whom there abound volumes and volumes of legal writing. We are all supposed to act, in relation to our behavior to others, as that “reasonable man of ordinary prudence” would act “in similar circumstances.” When the action is that of physician and surgeon, then the reasonable doctor of ordinary prudence would be the standard, which in turn is translated to mean action with such superior knowledge and skill as the doctor has or holds himself out to have at the time of his act.

At the outset the question might well be asked, why should there be any liability for malpractice at all?

The same considerations which protect the citizens of a state from assault and battery, maiming, and murder, if less dramatically applied, are involved in the protection of the public from inept and careless practitioners of medicine and surgery. The health and lives of the sovereign's subjects are very important, in the defense of the realm. Any unsocial activity on the part of an individual which lessens another's ability to bear arms is prohibited and penalized. It is an easy extension of this elementary rule to make answerable in damages a

doctor who has failed to employ proper care, skill and knowledge in the performance of his professional duty, to the possible loss, or loss of efficiency, of a potential soldier or sailor.

Hippocrates, the “Father of Medicine,” is supposed to have promulgated the oath governing the conduct of physicians and surgeons. There are two duties defined in the oath, one active, the other passive, or one positive and the other negative, as one chooses to categorize them, as follows: “I will follow that system of regimen which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous . . . and will abstain from every voluntary act of mischief and corruption.”

These elements of the oath have obviously not acted as insulation either to the public for harmful medical practices, or to the physicians and surgeons for responsibility in malpractice suits based on such conduct.

We can dismiss without further discussion those portions of the Hippocratic oath dealing with *voluntary* acts of “mischief and corruption,” because, obviously, these activities, by a code even older than that of Hippocrates—Hammurabi's—are punishable, and should be so, except that the doctor is no longer called upon to give his intentionally injured patient an eye for an eye, any more than the similarly harmed patient of a dentist will receive a tooth for a tooth.

The oath of Hippocrates undoubtedly acts as a deterrent to many forms of malpractice, but the doctrine of the “ordinary prudent man” is probably more efficacious, in that an infraction exposes the physician or surgeon to substantial monetary liability to his injured patient—not because of the doctor's voluntary act, not because “according to [his] ability and judgment” he has followed an improper regimen, but because of the superior skill and knowledge the physician or surgeon has or holds himself out as having, which failed to measure up to the community standard expected of superior knowledge and skill.

What the history has been in other than Anglo-Saxon systems of jurisprudence, is not within the

ATTORNEY VICTOR M. GORDON, of the New Haven Bar. Johns Hopkins Univ. (A.B. 1935), Boston Univ. School of Law (J.D. 1938); Editor-in-Chief of *Connecticut Bar Journal* (1960-1969).

purview of this writing. However, in our system of law, medical malpractice actions enjoy—if that is the word—a respectable antiquity, as the first recorded case, a British one, goes back to 1374, an era when the doctrine of the “ordinary prudent man,” or in the context of our discussion, the ordinary prudent doctor, had not yet arisen. The standard of the Hippocratic oath was applied, the court ruling that the doctor should not be held culpable in the treatment of a wounded hand, as he had performed to the extent of his ability and diligence. As will be seen, these standards are not quite sufficient for governing the conduct of the courts. The chief development is, of course, that however ably and however diligently the doctor performs his professional duties, this ability and this diligence may not be enough. The community standards of a doctor's professional behavior dictate that a person so holding himself out to have superior skill and knowledge in the healing arts has to perform with the ability and diligence of a reasonably prudent doctor, a level which might be far higher than the best of that particular doctor's ability and diligence. The easiest analogy might be this: No matter how much I might study and practice, I could never achieve the manual dexterity to play the piano as well as, say, Vladimir Horowitz. There would be no particular culpability in my failure, despite the exercise of such talents as I do have, to the utmost extent of my ability and diligence. But I could hardly be expected to play with the superior knowledge and skill one would look for in an accepted concert pianist. Further, if I were to hold myself out as a concert pianist, while one might conceive of situations where such representation might result in the lodging of a lawsuit against me, no one in the normal course of events would be harmed in a legal sense—however aurally—by such misrepresentation. The doctor, on the other hand, in effect, says “I have and will exercise the ability and diligence expected of one with superior medical knowledge and skill, and anyone who patronizes me can depend on this, or collect money damages from me if I am holding out to be something more than I am, that is, if I turn out to be less than an ordinary prudent doctor by the medical standards of my community.”

The hypothetical quotation just enunciated would give one the impression that the doctor's liability is one for breach of contract, rather than one in tort, a distinction which at first blush appears to add nothing to the reader's intellectual wealth, but only serves to bring in an element of

severe confusion. Therefore, a digression at this point should, it is hoped, be helpful.

The difference between tort and contract actions has by most modern procedural systems been eliminated. Originally, when English law was first being laid down, there were various procedural fictions and niceties connected with the commencement and maintenance of litigation which offered the lawyer innumerable and often insuperable challenges in a vast intellectual game; and unless the precisely correct writ was employed, an otherwise perfectly good legal action would crumble in the inexorably fastidious charade of violations of the rules of pleading. There were many forms of action, but they essentially sounded in contract (*i.e.*, *breach of contract*) or they sounded in tort (a wrongful act *not* a breach of contract). This is about the only procedural distinction which has survived in present-day litigation.

Thus, reverting to the quotation above which prompted the foregoing historical divagation, it sounds as though what the doctor is saying is that he is making a contract with the patient to use a certain standard of skill and care, and if he fails to do so he is responsible to the patient not for the commission of a private wrong (*i.e.*, a tort) but because he has breached his contract, express or implied, that he has certain skills and will use them.

While the relation between patient and physician is a consensual one, this does not necessarily spell out the existence of a *contract*. The public considerations herein described are closely tied to the nature and exercise of the doctor's profession.

Indeed, the oldest American litigation on medical malpractice, which happened to be a Connecticut case, went on the theory that the undertaking on the part of the surgeon to perform a mastectomy safely and skillfully was ignored by the physician in that his professional performance was unskillful, ignorant and cruel, “contrary to all the well known rules and principles of practice in such cases.” This was in 1794. By the middle of the 19th Century the Supreme Courts of various states had enunciated the standards of professional conduct which to some extent still adhered to the contractual basis for liability, injecting the “ordinary prudent doctor” standard, but not quite willing yet to adopt that standard wholly to the abnegation and exclusion of the contractual basis for liability. A summary of these requirements would run something as follows:

1. That the physician possess reasonable learning, skill and experience.

2. That these attributes be such as are ordinarily possessed by others in his profession.

3. That these attributes be those ordinarily regarded in his community as necessary to qualify him to practice medicine.

4. That he will employ reasonable and ordinary care, skill, diligence and the application of his knowledge and best judgment to accomplish what he has undertaken to do.

5. That he does not undertake for extraordinary or uncommon learning, skill, experience, care or diligence.

That is not to say that under specific factual situations a doctor may not even in modern times be liable for a breach of contract pertaining to the conduct of his profession. Supposedly, there are doctors foolish enough to guarantee a cure to their patients, just as there are lawyers foolish enough to guarantee that a client will emerge victorious in a particular lawsuit. Should untoward results occur in either case, the usual principles of the law of contracts, it is supposed, would apply—and this without reference at all to the commission of that private wrong we have described as a tort. Such actions would be founded on breach of contract, not essentially, what we are here treating, the action in negligence, that is, the breach of the duty of acting as an ordinary prudent physician or surgeon.

Stated in its most fundamental terms, negligence consists of doing something which ought not to have been done or omitting the doing of something which ought to have been done, the “ought” arising from the duty to possess and exercise the skill, learning, care, diligence and judgment of the ordinary prudent professional in the community under similar circumstances.

In determining the standard, we do not adopt the medium between the least proficient and experienced practitioner and the most meritorious and experienced doctor, and from this try to approximate an “average merit,” but rather the standard of reasonably average merit amongst ordinarily good physicians.

Let us further analyze this ordinary prudent practitioner. As has been said, the duty does not go to the highest degree of care and skill possible, but only to the “ordinary” rather than “extraordinary” or “uncommon.” Of course, if a person holds himself out as being a “specialist,” that is to say having peculiar skill or knowledge in the treatment of particular conditions, then the patient is entitled to have a special degree of knowledge and

skill, not of the ordinary general practitioner, but rather of the ordinary prudent specialist. It must be remembered that in neither case, that of the general practitioner or of the specialist, is his own best skill and care the proper standard, as, obviously, the particular doctor’s own best skill and care may fall below the standards required of the “ordinary prudent practitioner.”

Some courts do not impose a higher standard of skill and care upon a specialist than upon a general practitioner. Also, whether a doctor is a specialist or a general practitioner is a matter of fact, not a matter of law, and is largely determined by the doctor’s own pronouncements and his representations as to the degree of skill which he as a specialist possesses.

Stated succinctly, the general rule is that the doctor must be careful in his treatment, that standard in turn determined by reference to relevant facts either known, or which by the exercise of due care ought to have been known.

In order to comply with the standard of duty required of the practicing physician, he must have progressed beyond the dark ages of medicine, and have kept abreast of the state of medical science at the time. There seems to be a split of authority between the requirement that a doctor exercise standards of skill and care required by thoroughly educated physicians, and a standard less strict than that, some courts holding that the former stated standards are much too high. In this connection, the opportunity and resources for the practitioner in a small rural community to keep abreast of medical advances suffer by comparison with the facilities available in a large city for developing skill, knowledge and prowess in the practice of his profession. Yet, this distinction has been criticized, particularly in the case where a large city is available to the country practitioner with an office in a nearby small village. Because of better transportation and communication these days than our forefathers enjoyed in the past, it is increasingly becoming the duty of a physician to make available to his patient treatment, facilities, training and skill of a more advanced or favorable grade than his community can furnish, and it is for this reason that, gradually, the standards between rural and urban practice will be disappearing.

It is possible that in a particular community the standards of medical care (*i.e.*, diligence, learning and skill) may be exceptional, at either end of a scale of values. Therefore, it is conceivable that it would be unfair (to the patient) to apply the stand-

ard of a physician practicing in a "low-merit" medical community; just as it would be unfair (to the doctor) to measure his performance by the exceptionally high standard of skill in the megalopolitan community. Therefore, the tendency of the courts is to eschew the standards of a *particular* locality, but instead to construct a fictitious locality (just as non-existent as the "ordinary prudent doctor") and apply the standards of physicians of ordinary skill and care in "similar communities."

A comparatively safe rule would be for a physician, small-town or otherwise, to exercise the degree of care and skill which could not possibly constitute negligence in *any* community, no matter how small or large.

Situations will arise where only one possible course of treatment is indicated. It will be at the doctor's peril if he departs from the settled practice in such cases, as he will surely be accused of experimentation or a want of attention or knowledge. Of course, where there is a conflict of authority as to what is the best treatment in a given case, the physician is only bound to do two things: to choose the course of treatment according to his best judgment, and to follow that course of treatment with due care. Where the conflict is between different schools of medicine, then the rules and principles relating to the diagnosis, remedies and treatment of the school followed by that physician will be the standards of skill and care to which the practitioner will be held. This is because the law gives no preference to, or recognition of, one school of medicine over others.

There are numbers of cases from American jurisdictions holding that the general rule as to schools of medicine is applied to practitioners from the schools of homeopathy, allopathy, osteopathy, chiropractic and Christian Science healing. Of course, the school must be a recognized school of good standing, whose rules and principles apply equally to all its members for their guidance in diagnosis and treatment. The nature of the case will, of course, be the determining factor as to what duties are to be performed by the doctor. And this in turn will dictate the degree of care, skill and diligence in the circumstances of the particular case which will have to be employed. If there is doubt in the doctor's mind as to the diagnosis, care or treatment of a particular patient, while he will not be criticized for lack of professional skill by reason of his failure to consult with another physician, if his best judgment tells him that he should consult with a colleague, he certainly would not be faulted for

doing so. In general, it might also be said that the patient's condition at the time of the diagnosis, care and treatment is the important factor, not what the condition might have been in the past or what it might be in the future. This is merely an extension of the fairly obvious doctrine that ordinary care would not be sufficient where the circumstances require extraordinary care. Again, because of the permutations and combinations of circumstances which might arise, the citation of examples would yield small profit to the reader. Yet, where mishaps, or unusual consequences cannot reasonably be foreseen, the physician or surgeon cannot legally be put in a position of an insurer, who has warranted, guaranteed or insured a cure, or even that there will be beneficial results of the treatment.

It ought to be remarked that there is no diminution of the standard of care required of a physician by reason of the fact that his services are rendered gratuitously. It was because of this long-standing rule that some states have passed "Good Samaritan" statutes, exonerating the physician from liability for the negligent care he might render an unconscious patient, or one otherwise unable to give his consent to the rendition of medical attention. By the same token, a physician is not required to render professional services to everyone who applies, and even if his refusal is arbitrary, even if he is the only physician available, he may refuse to respond to a call or render treatment. This does not mean to say that once a physician has undertaken a case, as long as that case may require attention, he is not bound to continue his attendance.

* * * *

Because of the myriad possibilities of malpractice, from the simple giving of advice to the performance of the most delicate and complex of operations, no attempt has been made here to do anything but generalize as far as the question of responsibility is concerned.

One of the reasons why the legal standards appear so imprecise, is to give latitude to the adjudication of vastly different situations in the milieu of a constantly changing social structure. While the precedents do betoken a degree of inflexibility, just as the medical profession must be equipped to handle new techniques and new developments, so also must the law be responsive—even though, frequently, much as a laggard—to patterns of constant improvement. It is unfortunate, but all too true, that juridical science does not keep pace with developments in the medical profession.

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Question: A terminal patient was dying as a result of a series of strokes. Two physicians, one of whom was the patient's own son, decided with the consent of the family to hasten the end by withdrawing all medications and fluids given intravenously. Is this procedure permitted by Jewish law?

Answer: If the patient is a hopelessly dying patient, the physician has no duty to keep him alive a little longer. He is entitled to die. If the physician attempts actively to hasten the death, that is against the *ethics of Jewish law*. In the case described, the physician is not really hastening the death; he has simply ceased his efforts to delay it. The ethics of Judaism underscores:

"There is a time to live and a time to die."

"A man has a right to die with dignity."—Ecclesiastes

Marcus Aurelius stated in another way:

Thou has embarked, thou hast made the voyage,
Thou has come to shore. Get out. . . .

Meditations

Book 3 paragraph 3

Liability For Use of Paramedical Personnel

Richard P. Bergen

There is increased discussion about the use of paramedical personnel to remedy the present shortage of physicians and to meet the increasing medical needs of the public. Leaders in the medical profession increasingly recognize that many of the duties performed by physicians are routine and repetitive, and can be performed by non-physicians after proper training and under supervision. The list of medical functions performed by and being delegated to registered nurses, laboratory technologists, X-ray technologists, and even to office assistants is growing.

Though many of these duties may be routine and technical, they sometimes are of critical importance to the well-being, health and life of a patient. This is why the delegation of duties of such personnel must be carefully selected as to those requiring the supervision of the physician.

The important factor obviously is the safety and well-being of the patient. If a physician knows that a paramedical assistant is well qualified to perform a particular procedure, and if it is performed under his direction and supervision, sufficiently close and detailed to prevent harm to the patient in the event of untoward developments, he may properly delegate even highly complicated and delicate procedures to such an assistant. This is the logical analysis of the problem.

Delegation of any functions in the care and management of patients changes the relation between physician and patients, with changes also in the legal relations. If a physician delegates a function in the management of his patient to a paramedical assistant, he is not only medically responsible for the assistant's actions, and complications, but also legally responsible. The more a physician uses paramedical assistants, the greater his legal risk of liability; the more hazardous the procedures he delegates, also the greater his risk of liability. The use of paramedical assistants by physicians will of course increase the number of patients they can care for, but their legal hazards will also increase.

What exactly does the law provide concerning the liability of a physician for using a new type of paramedical assistant to perform functions previ-

ously performed only by physicians? For example, if a general surgeon trains a high school graduate, not a registered nurse, to assist him in surgery in cases ordinarily permitted for a first year intern in a teaching hospital, what is the legal consequence when a patient is injured during surgery under such circumstances?

Let us examine the law as it stands today to see if it has the answer. We must recognize that though we may find principles of law, specific cases in this field may be relatively few in the individual states. We may find few specific answers from statutory law—that is, the law passed by legislatures. Most of it will be found in the common law: judge-made, case by case, and state by state law. We can expect, moreover, that the more established the idea of the use of paramedical personnel becomes, the more we can expect suits, the decisions from which establish “the law.”

First, it is a well established principle that an employer-physician is liable for an injury caused by the negligence of his employee, even if the employee is another physician. Also, if a hospital employee is assigned to him for his special use and service, even temporarily, the physician may also be liable for the negligence of this hospital employee, under the legal doctrine of “borrowed servant.”

In delegation of duties, a physician escapes liability only if he delegates that function to a completely independent contractor. Practically, this means to another fully independent physician. Paramedical personnel would be independent contractors only if they were performing duties within their own legal abilities and rights. A podiatrist or optometrist would be an example of a paramedical personnel who would be legally competent to take over duties as an independent practitioner and contractor.

A physician could delegate or refer a patient to an optometrist for services within the legal scope of the practice of optometry. The physician would avoid all the vicarious liability for any negligent acts of the optometrist acting within his field. Technically, and by analogy, the same applies to other paramedical personnel. Though there are advantages to the physician in this, there are also some

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disadvantages. The physician does lose his virtually complete control over the patient care. It also involves greater fragmentation of medical practice. It may be better for the physician to retain complete control and responsibility over his patient—with the burden of liability for his paramedical assistants or referents.

Though there are but few court decisions which deal with the physician's liability for these new types of paramedical personnel, there are many court decisions relating to the vicarious liability of physicians for the acts of their own employees or of hospital employees. Most such cases involve legally recognized employees, such as licensed physicians, residents, interns, registered nurses, or certified technologists. Those whom we might now classify as paramedical assistants have had no official legal status.

The nurses have assisted physicians for many years, but the first nursing practice acts were not enacted until 1903. And though other paramedical personnel were trained and used even much earlier than that, licensure and certification of such personnel did not appear until a much later date. These latter might be called "irregular" paramedical personnel—that is, personnel who are not licensed, registered, or certified under state law.

In the 67 years since the first nursing practice acts established the first officially recognized class of paramedical personnel, I have found only 22 reported appellate court decisions involving the liability of physicians for the conduct of "irregular" paramedical personnel.

One of the earliest cases involving "irregular" paramedical personnel occurred in Georgia in 1920: a physician permitted his negro servant to give treatment to his patients during his absence. The issue was whether or not he was responsible for her acts performed during his absence. The doctor claimed that he was not liable as she acted independently during his absence. The court ruled otherwise. It said that a physician who tells a patient that an office assistant will give treatments in his absence is in effect assuring the patient that the prescribed treatments are of a character that do not require the personal service of a physician, and that the patient may safely receive the treatment from the office assistant.

As various and particular paramedical specialties develop, they will seek official status from the individual states. If recognized, their education, authority and responsibilities will be spelled out in the law as are the rights and authority of registered

nurses, whose duties have increased so greatly that the written statutes have not kept up with them. If and as particular paramedical specialties become legally licensed or certified, one problem will be whether or not the act performed is within the stated provisions of the statute permitted to such personnel. Possession of a license or certificate is evidence that the possessor has acquired the prescribed training, and is legally permitted to perform the act. It was in 1966 that a court for the first time specifically held that an act performed by a paramedical personnel not included in the statutes may be proof itself of negligence.

A licensed practical nurse in a physician's office was giving a 2 year old boy a polio booster shot. The needle broke off in the buttock when the boy suddenly moved. It was not removed until 9 months later.

The Washington Supreme Court held that as a licensed practical nurse, she acted unlawfully in giving the shot. In this state, only a licensed professional nurse could give such inoculations. The court stated that this unlawful act permitted an inference that she lacked the knowledge and skill in giving the shot.

But the court did recognize that lack of a license to do this act was not in itself equated with liability. The court ruled that in order to recover damages the plaintiff would have to prove that the lack of this license was the proximate cause of the injury to the patient. A new trial would be required to determine whether or not the L.P.N. had been negligent in failing to anticipate and guard against sudden movement of the boy.

When a physician hires any personnel, he must demonstrate reasonable care in choosing and employing competent personnel. If this paramedical personnel possesses a license or certificate, it will at least be evidence that the possessor has had the prescribed training. But the physician is still responsible for making sure that such personnel are competent, regardless of a license or certificate; and to see to it that his patients are in safe hands when receiving care from paramedical personnel. A physician may be shown to have been negligent in how he chose such personnel. Possession of a license or certificate is an important factor that he has shown care in his choice.

Court cases reveal how a physician allowed a young high school graduate, with 2 years' experience as a nurse's aid, to remove sutures, prescribe medication, and inject penicillin in his absence.¹ Another physician allowed an untrained hospital

orderly to catheterize a postoperative patient.² Still another permitted a layman to perform amputations.³ If the physician knowingly or carelessly employs an incompetent or untrained paramedical assistant, he is himself negligent and liable for injuries to patients proximately caused thereby. It is his duty to see to it that his patients are in safe hands when receiving care from paramedical personnel.

The physician-employer is of course liable for the injurious acts and negligence of his "irregular" assistant. For example, for such acts as the mistaken injection of adrenalin;⁴ dispensing the wrong medication.⁵ A study of these decisions seems to indicate that if paramedical personnel are assigned to duties ordinarily performed only by a licensed physician, they are apt to be held to the same standard of care as a physician.

What seems to be the physician's risk of liability in the use of new kinds of paramedical personnel to assist physicians in new ways? It seems inevitable that such medical innovations must necessarily increase risks. The risk, of course, is lessened if the assistant is thoroughly trained and carefully supervised. It is reduced still further if a formal training program is established and effectively operated by a medical school or a teaching hospital. It is minimized further if appropriate medical and specialty societies establish standards for training and a program for private certification of students who satisfactorily complete the approved training. Official state certification would add only a little protection. Compulsory state licensing would not further reduce the risk for the employing physician.

Protection for the physician in the use of new unofficial paramedical personnel may be obtained by amending the particular state's medical practice act. A few grant general authority to physicians to

use competent assistants, substantially at the physician's discretion. One of the best provisions is that in the Oklahoma Act, as follows:

"Nothing in this article shall be so construed as to prohibit service rendered by a physician's trained assistant, a registered nurse or a licensed practical nurse if such service be rendered under the direct supervision and control of a licensed physician."

Where strict compulsory licensing laws are unreasonably impeding the effective use of new paramedical personnel, a statutory amendment along this line might be advisable.

The history of professional nursing is especially instructive. There has been a steadily expanding paramedical function by nurses. They are doing procedures today which would have shocked the medical profession and public a few years ago. This has been done without any changes in the nursing practice act. I believe that in most instances delegation to nurses under a physician's supervision can be made of virtually any procedure that does not, on a scientifically determined basis, require the personal knowledge, skill and judgment of a physician. This has already been accomplished with respect to nurse anesthetists without the benefit of any special statute. I believe that it can be done gradually in relation to many other important medical functions, provided that the competence of the nurses for the assigned duty is assured by comprehensive special training.

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Malpractice — A Review of 174 Claims

John W. Teahan, M.D.

Whether the filing of a Malpractice claim is becoming increasingly fashionable is a moot question, but to physicians as well as to their insurance carrier it is reaching an alarming level. The number of claims seen at The Travelers has risen annually and for the first six months of 1969 a total of 174 claims were received in the Home Office. A review of these has been made in an effort to determine if any common denominator exists in the evolution of this type of problem and what might be done to diminish the anxiety, expense and loss of time to all concerned.

The claims analyzed here came from 27 states and The Travelers was the carrier for the hospital in 102 instances, and for the physician in 72 others. In almost every claim both the hospital and doctor were alleged to have been negligent but we were not involved with both the physician and the hospital in any single case.

An explanation is indicated to describe how these claims are processed. The file contains the complaints as drawn up by the plaintiff's attorney, the complete hospital record, reports of the attending physicians, and in some cases evaluation of the case by a qualified consultant in the local area. Further aid in studying the particular case is also obtained by conferences with local qualified specialists and by referring the file for review in other cases to one of our consultant specialists in the area where the suit has been instituted, if this has not been previously done. Our purpose is to objectively review the submitted record, direct further investigative efforts, if needed and provide a medical analysis which assists in the decision to either settle or defend the case. It is our responsibility to point out to our examiners and their associated attorneys the potential areas on which an intelligent plaintiff's attorney might concentrate. In this way they are better able to prepare the case and to obtain the opinions of the local medical specialists necessary for their presentation.

The following charts indicate the opinions arrived at in view of apparent conclusive medical evidence. These claims have not all been tested

in court and it does not follow that our analysis will necessarily be the final decision. However, especially in cases where potential exposure exists, it indicates the need for further medico-legal preparation and evaluation.

TABLE 1
HOSPITAL CLAIMS

Medical school affiliated	8(+)	10(—)	1?
Non medical school affiliated	31(+)	44(—)	2?
Osteopathic	3(+)	3(—)	0
Total	42	57	3

TABLE 2
PHYSICIANS CLAIMS

Board qualified	9(+)	8(—)	5?
Non Board qualified	21(+)	18(—)	4?
Osteopathic	4(+)	0	0
Dentists	1(+)	2(—)	0
Total	35	28	9

(+) = Potential exposure

(—) = Non-exposure

The above figures show little difference in the degree of probable involvement, regardless of the qualifications of the hospital or physician. The size of the hospital made little difference except in those with fewer than 100 beds, where the rate of apparent exposure was somewhat higher.

Among the cases reviewed, the following are of interest:

1. Five cases of sciatic nerve injury due to alleged faulty intramuscular injection were seen, four of which occurred in children.
2. Six cases of cardiac arrest occurred. It is well known that this is an unpredictable and feared risk of surgery and anesthesia and the failure to promptly recognize and treat this condition, and not its occurrence, is usually the only legitimate basis for a claim.
3. There were three cases of quadriplegia following anterior disc surgery and, in two of these, significant displacement of the bone plug occurred. Also, two lumbar disc cases died from massive retroperitoneal hemorrhage. One of these cases was done by a General Surgeon and another by an Orthopedic Surgeon of mediocre

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training. This latter patient had a myelogram done in one hospital and was then transferred to a second hospital for the operation. We suspect that the doctor did not have privileges for disc surgery at the first hospital and, therefore, the second hospital who gave him privileges appears to be in trouble.

4. Fifteen cases were reviewed where claims were made concerning treatment given in hospital emergency rooms. This type of claim is increasing significantly and this is understandable when one considers the vast number of patients seen in emergency rooms.
5. One hospital in greater New York City had six claims among this series. Only one showed any negligence and this was relatively minor. It is interesting to speculate how such a group of unjustified claims could develop in a single institution.

Many of the above incidents should never have occurred. Footdrop in a growing child is a significant disability which is basically inexcusable. Detection of cardiac arrest is the result of constant and acute observation, particularly on the part of the anesthetist. In our series, the presence of a well-trained anesthetist and an equally capable surgeon diminished almost completely the possibility of this type of claim being justified.

The emergency room problem will probably be helped by the increased staffing of these services by full time physicians if they are carefully selected. The availability of an interpreter is also desirable. We have had claims instituted, mostly unjustified, but nevertheless distressing to those involved, where the doctor, invariably from a foreign medical school, had trouble making himself clear to the patient, or where a patient, whose knowledge of English was either absent or limited, failed to comprehend and follow the doctor's instructions.

Some mention must be made about doctor-patient relations. A breakdown in this appears more often than any other single factor. Many patients develop, often unknowingly, an emotional depend-

ency and the doctor's success or failure in recognizing and meeting this need is often the factor which determines the development of a claim. Also, the publicity given transplant surgery, the restoration of traumatically severed limbs as well as "medical dramas" emerging from television screens have produced some contradiction of values among people in general. They appear to accept the failures and complications of these publicized and unusual procedures but expect, on the other hand, that every gall bladder operation and every fracture case, no matter its severity, should recover uneventfully. The increased demand for health services as well as the shortage in available skilled personnel has likewise added to the problem. Realization of this doctor-patient relationship along with complete office and hospital records, properly authorized operative and treatment permissions, are a few of the basic steps that can decrease the number of claims as well as make the defense of the many unjustified claims that much easier.

Finally, a dichotomy exists between the medical and legal professions in this field. The present system frequently results in awards in malpractice cases that are not proportionate to the proven damages. The submission of malpractice claims to arbitration by a board of experts has been suggested in the past and certainly appears to warrant serious consideration. Medical societies in many states have tried various plans in an attempt to control this problem and to at least decide which cases are unjustified and which have merit. It is my personal feeling that the system which has the best chance for success and which will be most widely utilized is one where objective minded members of the medical and legal profession work on a common committee.

Acknowledgment

My appreciation to Dr. Albert Larson, Vice-President and Chief Medical Director of The Travelers Insurance Company for his counsel in the preparation of this report.

Professional Continuing Education -- and Deductibility of Related Travel Expense Under the U.S. Income Tax Code

Alvin Edelman

An increasing number of physicians are taking advantage of opportunities to maintain and improve their skills, to the benefit of the medical students they teach and the patients they serve. Travel expense for educational purposes may be deducted in determining the U.S. income tax. This article will examine, in a general manner, the rules (as redefined by changes in Regulations and decisions) by which the Internal Revenue Service determines the propriety of such deductions by members of the medical profession.

Refresher Postgraduate Clinics

Regulation Section 1-162-5 of the United States Internal Revenue Service, as amended May 1, 1967, specifically allows a deduction, for Federal income tax purposes, of the reasonable costs of "refresher postgraduate education" which includes courses dealing with current developments.

Under this regulation a deduction may be allowed for educational expenses if they are necessary to maintain skills directly or immediately required in the taxpayer's profession, and a refresher course of instruction designed primarily for the benefit of established practitioners has been passed as a properly allowable deduction, since it enables a professional man to keep abreast of developments in his profession.

Thus, in the case of *Bistline et al. vs. U.S.*, 145 F. Supp. 802 (1956) and affirmed in the U.S. Court of Appeals in 1958 in 260 Fed. (2nd) 80, the Court allowed deduction for the tuition, travel and hotel expenses paid by an Idaho attorney in attending a course on Federal taxation in New York City.

Facts and circumstances, relative time devoted to personal educational purposes, must be taken into account. If the course of instruction is undertaken

primarily for the purpose of obtaining a new position, or a substantial advancement in position, primarily for the purpose of fulfilling the general educational aspirations or other personal purposes of the taxpayer, the expenditures will be disallowed as a nondeductible capital or personal educational expense.

Thus, if a doctor who does no surgical work attends a postgraduate course of instruction on surgery with the hope of becoming a specialist in a surgical field, it is likely that any expenses incurred in connection therewith would be questioned. The specific example given by the Internal Revenue Service as part of their regulations, Example one of the regulations, states:

"Example 1: A., a general practitioner in medicine, takes a course of study which qualifies him as a specialist in pediatrics. A's expenses for such education are not deductible because the course of study qualifies him for a new specialty."

In the case of *John S. Watson, et al.* 31 TC 1014 (No. 102), the Courts held that a doctor specializing in internal medicine would be allowed a deduction for the costs of additional psychiatric training if he took such training to maintain and improve his skill as an internist rather than to qualify himself as a psychiatrist.

When a physician plans to travel away from home in order to attend a refresher postgraduate clinic, he must keep in mind Section E of Regulation 1-162-5, which states:

"(e) If an individual travels away from home primarily to obtain education, the expense of which are deductible under this section, his expenditures for travel, meals, and lodging while away from home are deductible. However, if as an incident of such trip the individual engages in some personal activity such as sightseeing, social visiting or entertaining or

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other recreation, the portion of the expenses attributable to such personal activity constitutes nondeductible personal or living expenses and is not allowable as a deduction. If the individual's travel away from home is primarily personal, the individual's expenditures for travel, meals, and lodging (other than meals and lodging during the time spent in participating in deductible education pursuits) are not deductible. Whether a particular trip is primarily personal or primarily to obtain education, the expenses of which are deductible under this section depends upon all the facts and circumstances of each case. An important factor to be taken into consideration in making the determination is the relative amount of time devoted to personal activity as compared with the time devoted to educational pursuits."

Two illustrations given by the Service are relevant in this connection:

"Example (1) T., a self-employed tax consultant, decides to take a 1-week course in taxation, which is offered in City X, 500 miles away from his home. His primary purpose in going to X is to take the course, but he also takes a side trip to City Y (50 miles from X) for one day, takes a sightseeing trip while in X, and entertains some personal friends. T's transportation expenses to City X and return to his home are deductible, but his transportation expenses to City Y are not deductible. T's expenses for meals and lodging while away from home will be allocated between his educational pursuits and his personal activities. Those expenses which are entirely personal, such as sightseeing and entertaining friends, are not deductible to any extent.

"Example (2). The facts are the same as in example (1) except that T's primary purpose in going to City X is to take a vacation. This purpose is indicated by several factors, one of which is the fact that he spends only one week attending the tax course and devotes five weeks entirely to personal activities. None of T's transportation expenses are deductible, and his expenses for meals and lodging while away from home are not deductible to the extent attributable to personal activities. His expenses for meals and lodging allocable to the work attending the tax course are, however, deductible."

The case of Dr. Hoover of Columbus, Ohio, is indicative of the current position of the Internal

Revenue Service in respect to travel deductions for educational purposes. In the case of Hoover, 35 T.C. 566 (No. 60), Dr. Hoover learned of a "Postgraduate Medical Seminar Cruise." The seminar was conducted by five professors of Duke University Medical School aboard the S.S. Vulcania while sailing from New York to Venice, with stopovers at other ports. Dr. Hoover actually received a certificate showing twenty-five hours of postgraduate medical credit. The medical lectures began the first day at sea. They generally lasted fifty-five minutes, were followed by panel discussions and question and answer periods, and were held on about six or seven days of the eighteen-day trip. When the ship stopped at various ports, sightseeing tours were arranged. On his tax return the doctor deducted the cost of the cruise (\$1,881.86) as the expense of a "postgraduate refresher course." It should be pointed out that the travel brochure of the agency sponsoring the cruise stated: "The cost of attending is a deductible expense in computing taxes." In spite of this brochure and Dr. Hoover's reliance thereon, the Tax Court maintained that the main reason for the trip was to take a vacation—education was secondary. It noted that comparable courses given at medical schools take only four days and the cost averages about \$32.00. Result: Only \$232 was allowed as a deduction for educational expense.

A similar decision was reached in the case of Dr. Ralph Duncan of Kansas City, Missouri. Dr. Duncan, along with his wife, operated a sanitarium for the treatment of alcoholics. In 1953, Dr. Duncan visited several European cities. At various points, he contacted people in the medical field and visited hospitals. In several instances he observed the work of doctors involved in the study and treatment of alcoholism. Yet, in the Case of Duncan v. Commissioner, 31 TC 386 (1958), the tax court held that Dr. Duncan's trip was intended primarily for pleasure and disallowed all of his expenses except for a comparatively small amount. The Court emphasized that the trip covered most of the major sightseeing places in Europe, that Dr. Duncan had originally planned the trip with a non-doctor friend, and that the detail and arrangements were worked out by a travel agent. Furthermore, it was noted that the doctor had not made any preliminary arrangements before visiting the various European hospitals and clinics, and he did not record what he did or how much time he spent on such visits.

In 1956, Dr. Duncan took another European trip,

covering 20 cities. But this time, in the case of *Duncan v. Bookwalter*, 216 F. Supp. 301 (1963), the United States District Court held that most of the expenses were ordinary and necessary business expenses adjunct to the operation of the clinic, and were properly deductible. The distinguishable facts were that Dr. Duncan had made extensive preparations for the trip—including plans to attend an international congress against alcoholism in Turkey. He had made written notes concerning his visits to hospitals and doctors. At each point he visited all available alcoholism treatment centers, specialists in the subject and other people he felt could add to his knowledge on the subject. The Court, as a finding of fact, concluded that the entire time and effort on the trip was devoted to purposes of research and education, which in a field of specialization such as alcoholism were reasonable and necessary. See also *Bickel v. Commissioner*, 25 TCM 1037 (1962).

Medical and Surgical Conventions

The expenses of a doctor or surgeon in attending a medical or surgical convention are clearly deductible. The prior contrary ruling, *I. T. 1369*, CB I-I, 123, which held that amounts expended by a physician in attending a medical convention were not deductible, was revoked by *I.T. 2602*, CB, December 1931, p. 130, after the decision of *Cecil M. Jack vs. Commissioner*, 13 BTA 726. (ACQ.) The decisions since that time have consistently held that convention expenses of doctors are deductible. —See *Squier*, 13 BTA 1223 (ACQ); *Upham*, 16 BTA 950 (ACQ.) and *Coffey*, 21 BTA 1242. (ACQ.) Since the position of the Internal Revenue Service in its ruling and in its acquiescence in the decisions of the Board of Tax Appeals is to the effect that convention expenses incurred by doctors are deductible, there can be no question on this point.

Special Rules on Foreign Travel

A taxpayer who travels outside of the United States is allowed to deduct his entire travel expense if he spends all his time on business affairs, such as to attend a medical convention. But if some of his time is devoted to non-business activities, Section 274(c) of the Internal Revenue Code requires a disallowance of travel expenses allocated to non-business activities. The amount disallowed is computed by taking the deductible travel expense and multiplying it by the fraction of

$$\frac{\text{number of business days}}{\text{number of business days} + \text{non-business days}}$$

For example, assume a taxpayer flies to Rome for business purposes. The business takes eight days. He then flies to the French Riviera for a four-day holiday, and subsequently proceeds home. Assume further that the total transportation costs are \$500, and that a round-trip ticket to Rome costs \$400. The amount disallowed would be $\frac{4}{14}$ of \$400 (the four non-business days over the four non-business days + the eight days in Rome + the two days in transit or a total of fourteen.) Note that it is the \$400 figure that is allocated; the \$100 travel expense to the Riviera is clearly a non-deductible personal expense. Also note that the primary purpose of this trip was business.

Under certain circumstances, an allocation need not be made. For example if: (1) The trip outside of the country is less than one week. Regulation 1.274(c) defines a week as seven consecutive days, counting the day of return, but not the day of departure. For the purpose of this section of the Regulation, the United States is defined as the 50 States and the District of Columbia (Puerto Rico, Guam, and the Virgin Islands etc. are considered as being outside of the country.)

(2) Less than 25% of the time abroad was spent on non-business activities. Time is allocated on a day to day basis of "business days" and "non-business days" according to the following rules:

- (a) Days in transit are considered as business days, provided that the transportation is by a reasonably direct route.
- (b) Days where the taxpayer's presence is required are business days. For example, the taxpayer could attend a brief mandatory meeting, spend the rest of the day sightseeing, and it would still be a business day.
- (c) Days primarily devoted to business are business days.
- (d) If the taxpayer is prevented from conducting business because of circumstances beyond his control, the day will still be considered a business day.
- (e) Days where the taxpayer is on a standby status are business days. For example, if a taxpayer has business on Friday and Monday, and remains at his destination over the weekend, Saturday and Sunday will be business days.

(3) The taxpayer has no substantial control over the arrangement of the business trip.

(4) A personal vacation was not a major consideration in making the trip. Illustrative of the

operation of these rules are the following examples cited in the Internal Revenue Service Regulations:

"Example (1): Individual A flew from New York to Paris where he conducted business for 1 day. He spent the next 2 days sightseeing in Paris and then flew back to New York. The entire trip, including the 2 days travel enroute, took 5 days. Since the time outside of the United States away from home during the trip did not exceed 1 week, the disallowance rule of this section does not apply."

"Example (3): Individual C flew from Los Angeles to New York where he spent 5 days. He then flew to Brussels where he spent 14 days on business and 5 days on personal matters. He then flew back to Los Angeles by way of New York. The entire trip, including 4 days for travel enroute, took 28 days. However, the two days spent traveling from Los Angeles to New York and return and the 5 days spent in New York are not considered travel outside the United States away from home and, thus, are disregarded for purposes of this section. (Although the time spent outside the United States away from home exceeded one week, the time outside the United States away from home attributable to non-business activities (5 days out of 21) was less than 25 percent of the total time outside the United States away from home during the trip. Therefore the disallowance rules of this section do not apply."

"Example (6): F, a self-employed professional man, flew from New York to Copenhagen, Denmark, to attend a convention sponsored by a professional society. The trip lasted three weeks, of which two weeks were spent on vacation in Europe. F generally would be regarded as having substantial control over arranging this business trip. Unless F can establish that obtaining a vacation was not a major consideration in determining to make the trip, the disallowance rules of this section apply."

"Primarily for Business Test"—When no allocation is required, the "primarily for business" test will be utilized. This is the same rule that is applied to domestic travel. For example, when a physician or surgeon makes a business trip, and as an incident to the trip engages in some personal activity, such as social entertaining and sightseeing, only the expense allocable to the personal activities is not deductible. If the trip is primarily a vacation, the Tax Court, and now the Regulations, hold that expenses that are ordinary and necessary and direct-

ly related to the taxpayer's business are deductible. Expenses by an individual in traveling away from home to attend a convention or other meeting are deductible under Section 162 (a) (2) of the Code, provided he attends for the primary purpose of deriving a business benefit.

Substantiation

No deduction will be allowed for travel expenses unless the taxpayer adequately substantiates each expenditure in accordance with Section 274 of the Internal Revenue Code. This supersedes the doctrine of *Cohan v. Commissioner*, 39 F2d 540 (2nd cir. 1930), where the Court held that where evidence indicated that a taxpayer incurred a deductible travel or entertainment expense, but that the exact amount could not be determined, the courts shall make, "as close an approximation" as they can, and not deny the deduction in its entirety. Now, such expenses will be disallowed:

"Unless the taxpayer substantiates by adequate records or by sufficient evidence corroborating his own statement (A) the amount of such expense or other item (B) the time and place of travel (C) the business purpose of the expense or other items . . ."

The regulations state that "a record of the elements of an expenditure made at or near the time of expenditure, supported by sufficient documentary evidence, has a high degree of credibility; not present with respect to a statement prepared subsequent thereto. . . ." This contemplates an entry in a diary or an account book. A receipt will usually satisfy the requirement of sufficient documentary evidence if it contains information to establish the amount, date, place, and character of that expense. It is not generally necessary to make a diary entry which duplicates information contained in a receipt.

Records and receipts should be retained through the period in which the tax return in subject to audit—usually three years.

Conclusion

No all-encompassing ruling is available that would be binding on the Internal Revenue Service as to the deductions allowed for travel and various expenses incurred by the individual doctor in reference to his travels to and from our Postgraduate Clinics and Scientific Congresses. The individual facts and circumstances of each case will be reviewed in determining the relative amount of time

devoted to personal activity by the doctor as compared with the time devoted to educational pursuits on the particular trip. The college presents planned, extensively prepared clinics and scientific programs. Registration, followed by proper attendance at the sessions gives the benefit of improved knowledge and your registration and attendance

certificates can then be used to substantiate your proper deductions. It is suggested that each physician's itinerary be carefully planned in light of the rulings and regulations aforementioned, so that no erroneous impressions will be created and only such deductions be claimed as can be reasonably substantiated.

COUNCIL APPROVES OPINION ON THE MANAGEMENT OF ABORTION IN AN OFFICE SETTING

Several third party payors have raised a question as to what procedures are considered professionally acceptable with respect to the management of abortion in an office setting. On December 16, 1970, the Council approved a subject opinion of the Committee on Maternal Morbidity and Mortality which reads as follows:

"That, as an office procedure, the management of abortion by dilatation and curettage or vacuum suction is considered *not* acceptable. The emergency removal of placental tissue from the already dilated cervical os, when performed judiciously, is considered *not* to constitute an intrauterine surgical procedure."

The Medicolegal Autopsy

Elliot M. Gross, M.D.

Introduction

Public Act 699, passed by the 1969 General Assembly, created the Commission on Medicolegal Investigations, and established the Office of Medicolegal Investigations directed by the Chief Medical Examiner, a forensic pathologist. He, in turn, was given the statutory responsibility of investigating deaths which occur by violence, suddenly or unexpectedly, and under suspicious circumstances. Additionally, he was also given the authority to investigate deaths of persons whose bodies are to be cremated; and deaths related to disease pertaining to employment or which might constitute a threat to the public health. Connecticut thus became the ninth state to provide for the appointment of such a medical official and one of an increasing number of municipal, county, and state governments which have delegated the function of looking into such deaths to an agency directed by an experienced physician and equipped with suitable scientific laboratories.

The Office of Medicolegal Investigations is currently located at the University of Connecticut Hospital-McCook Division, in Hartford. Plans made by the Commission, which supervises the operations of the office and which appointed the Chief Medical Examiner, call for the establishment of a permanent facility at the University of Connecticut Health Center in Farmington. The efficacy of situating an agency of this type at a medical center, as required by Public Act 699, has been demonstrated by similar affiliations in Maryland, Oklahoma, Cleveland, and New York City.

Physicians, among others, are directly responsible for promptly notifying the Office of Medicolegal Investigations of any death coming to their attention which is subject to investigation by the Chief Medical Examiner. During the developmental stages of the agency, such reports are being expedited locally by physicians serving as Assistant Medical Examiners.

In certain instances, the investigation into a reportable death may require a postmortem examination.

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The autopsy comprising part of an official inquiry into a sudden or suspicious death differs from that rendered in a hospital for clinical-pathologic correlation of natural disease. The two procedures are dissimilar in the conditions under which they are authorized; the purpose for which they are conducted; and the manner in which they are performed.

Depending upon the jurisdiction, an official autopsy may be ordered under precisely limited statutes by legal authorities or judiciously performed by forensic pathologists with recognized stipulated discretion. The decision to conduct one in either instance constitutes an imposition under law for specific purposes, which should be properly and carefully explained to the family of a deceased individual. Permission to conduct an autopsy upon the body of a person dying from natural causes following hospitalization requires informed consent by next-of-kin according to legally established precedence of relationship.

Under circumstances either of official requisition or of consent, the privilege to perform an autopsy should not be abused as an all-encompassing authorization. Distinction must be made between ordering an autopsy upon the body of an obviously injured child struck by an automobile, the licensed driver of which has not left the witnessed accident; and the decision to perform one following the "hit-and-run" death of a young pedestrian to correlate injury and recover trace evidence, as well as to establish with a reasonable degree of medical certainty the cause of death. Nor should permission to perform a hospital autopsy be categorically solicited without regard for statutes governing deaths reportable to the medical examiner.

The indications for a legally required autopsy need not solely be the determination of the cause of death. Like the hospital autopsy, however, it can not be properly conducted without an evaluation of the particular circumstances of death. Where criminality is involved, such as in a homicidal shooting, recovery of evidence, such as bullets; identification of the body; estimation of the interval between the time of death and the discovery of the body; are among the obvious ancillary reasons. Asphyxia may be the readily recognized cause

of death, but a postmortem examination may allay other suspicions in an urban area when the body of a recently arrested addict is found hanging in a detention cell.

The sudden demise of an individual in a public place may appear as due to the natural consequence of coronary arteriosclerosis, but, if death occurs in a restaurant, an autopsy may very well disclose the accidental obstruction of the larynx by a bolus of undigested meat. The examination of the body of an out-of-state hotel registrant found dead with no immediate antecedent illness may obviate a lengthy police investigation and answer the future questions of relatives. The suspicion that a sudden death has resulted from suicide may not always be confirmed even with prior suggestive symptomatology.

Pathologists routinely learn to perform an autopsy in one of two ways, both of which focus on the

inspection of the internal organs in a systematic fashion. In the official autopsy the technique must vary with the nature of the death, and the external examination frequently becomes of primary importance as specific injury patterns are recognized. In some instances, as in a death associated with drug addiction, the viscera may disclose no specific abnormalities, and the determination of the cause of death must be based on the circumstances as well as the external examination and toxicologic analysis of the tissues and fluids.

Lastly, an official autopsy must be performed by a pathologist bearing in mind that the body may be subject to re-examination before interment and following exhumation; and that his findings, initially observed in his notes and as finally defined in his protocol, become records subject to critical review by attorneys and other pathologists.

Before prescribing, please consult complete product information, a summary of which follows:

INDICATION: Relief of insomnia of varied etiology.

CONTRAINDICATIONS: Patients with known hypersensitivity to the drug.

WARNINGS: Caution patients about combined effects with alcohol and other CNS depressants. Caution against hazardous occupations requiring complete mental alertness, such as operating machinery or driving a motor vehicle shortly after ingesting the drug.

Physical and Psychological Dependence: Physical and psychological dependence rarely reported. If withdrawal symptoms do occur they may resemble those associated with withdrawal of barbiturates and should be treated in the same fashion. Use caution in administering to individuals known to be addiction-prone or those whose history suggests they may increase the dosage on their own initiative. Repeat prescriptions should be under adequate medical supervision.

Usage in Pregnancy: Weigh potential benefits in pregnancy,

during lactation, or in women of childbearing age against possible hazards to mother and child.

PRECAUTIONS: If sleeplessness is pain-related, an analgesic should also be prescribed. Perform periodic blood counts if used repeatedly or over prolonged periods. Total daily intake should not exceed 400 mg, as greater amounts do not significantly increase hypnotic benefits.

ADVERSE REACTIONS: At recommended dosages, there have been rare occurrences of morning drowsiness, dizziness, mild to moderate gastric upset (including diarrhea, esophagitis, nausea and vomiting), headache, paradoxical excitation and skin rash. There have been a very few isolated reports of neutropenia and thrombocytopenia; however, the evidence does not establish that these reactions are related to the drug.



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General Statutes of Connecticut

Title XXXII Examining Boards

Chapter 206

State Board of Healing Arts

Sec. 4351. Appointment of members; disqualification. The state board of healing arts shall continue to consist of three members. On or before July 1, 1949, and biennially thereafter, the governor shall appoint one member of said board, who shall serve for six years. . . . No person shall act as a member of said board who shall have received, from any school, college or department of a university teaching any branch of the healing arts, a degree in any of said healing arts or who shall be a trustee, director, officer or employee of any hospital. The members of the board shall receive no compensation for their services. . . .

Sec. 4352. Healing arts defined. The practice of the healing arts shall be understood to be the practice of medicine, osteopathy, chiropractic and naturopathy.

Sec. 4354. Appeal. Any person whose application for said certificate shall be denied by said board of healing arts may, within thirty days thereafter, appeal to the superior court for Hartford county, and said court shall, upon such appeal, inquire into the cause of such denial and may confirm or revoke such decision or may order said board to grant such appellant a certificate. Notice of such appeal shall be served upon any member of said board by leaving with such member or at his usual place of abode an attested copy thereof within thirty days after said board shall have notified such applicant of its decision.

Sec. 4355. Grievance committee. Revocation of license by superior court. Said board shall act as a grievance committee to hear complaints which may be brought before it against any person practicing any of the healing arts. After hearing upon any such complaint, reasonable notice of which hearing shall have been given to the person so complained of, said committee shall present a statement of the charges contained in such complaint to the attorney general, if it shall find probable cause therefor, and the attorney general shall thereupon bring an action based on such charges in the superior court for the county in which such person shall

reside, and said court may order the revocation of the license of such person or take such other action as it may deem equitable. No provision of this chapter relating to hearings before any of the examining boards shall affect the power of said board under the provisions of this section.

Sec. 4357. Obtaining certificates by fraud; penalty. No person shall (a) buy, sell or fraudulently obtain or furnish any diploma, certificate, license, record or registration . . . to practice any branch of the healing arts . . . ; or (b) . . . ; (c) practice any branch of the healing arts . . . under a name other than his own or under a false or assumed name; or (d) use advertising relating to the public health which is untrue, fraudulent, misleading or deceptive; or (e) . . . ; or (f) aid or abet practice in any branch of the healing arts . . . by a person not lawfully licensed or registered or authorized to so practice within this state, or by a person whose license or registration or authorization to so practice shall then be suspended or revoked; and no person shall, during the time of his license, registration or authorization to practice any branch of the healing arts or any subdivision thereof shall be suspended or revoked, practice or attempt or offer or advertise to practice such branch or subdivision, or be employed by, work for or assist, in any way, any person licensed or registered to practice any branch of the healing arts or any subdivision thereof in this state. No provision of this section shall be construed to prevent any student in, or graduate from, any school or institution giving instruction in the healing arts, approved as provided in the statutes, from taking supplementary training with any regularly licensed and reputable practitioner, or from serving as interne in a hospital. Any person who violates any provision of this section shall be fined not more than five hundred dollars or imprisoned not more than one year or both for each separate violation and, for a second offense, shall be both so fined and imprisoned.

Sec. 4358. Suspension, revocation or annulment of license. The license or certificate of registration of any licensed or registered practitioner of the

healing arts in this state may be revoked, suspended or annulled, or such practitioner may be reprimanded or otherwise disciplined, after notice and hearing, on the recommendation of the examining board representing the branch of the healing arts practiced by such practitioner for any cause named below. Proceedings relative to the revocation, suspension or annulment of a license or certificate or registration or toward disciplinary action may be begun by the filing of written charges, verified by affidavit, by the state department of health with the examining board representing the branch of the healing art practiced by the practitioner. The causes for which a license or certificate of registration may be revoked, suspended or annulled or for which a practitioner may be reprimanded or otherwise disciplined are as follows: Conviction in a court of competent jurisdiction, either within or without this state, of any crime involving moral turpitude, of any infamous crime or any crime in the practice of his profession; immoral, fraudulent, dishonorable or unprofessional conduct; illegal, incompetent or habitually negligent conduct in the practice of the healing arts; habitual intemperance in the use of spirituous stimulants or addiction to the use of morphine, cocaine or other habit-forming drugs; advertising in connection with the practice of the healing arts which is found by the board representing the branch of the healing arts practiced by the practitioner to be deceptive, misleading, extravagant, improbable or untrue; aiding or abetting the unlawful practice of any branch of the healing arts; failure to record a license or certificate of registration as required by law; insanity of the practitioner's fraud or deception in obtaining a license or certificate of registration. The clerk of any court in this state in which a person practicing any branch of the healing arts has been convicted of any crime as described in this section shall, immediately after such conviction, transmit a written report thereof, to the state department of health, containing the crime of which he was convicted, the date of conviction and the branch of the healing arts practiced by such practitioner.

Sec. 4359. Hearing of charges; revocation. On receipt of a written charge, verified by affidavit, filed by the state department of health, the examining board shall transmit a copy thereof to the practitioner named therein and shall, at the same time, notify such practitioner of the place where a hearing will be held by the board on the charge and of the time of such hearing which shall be not less than ten days after the service of such

notice. If a personal service on the practitioner or his counsel cannot be had, the secretary of the board shall cause to be published on three different days, at least thirty days prior to the hearing, a notice of the time and place of the hearing in a newspaper published in the county in this state in which such practitioner was last known to reside. A copy of the notice so published shall be sent by registered mail to the practitioner at his last-known address. The practitioner against whom a charge is filed shall have a right to a hearing before the board having jurisdiction, may appear in person or by counsel, or both, may produce witnesses and evidence in his behalf, and may question witnesses. The board may subpoena witnesses and papers in its own behalf and, if requested by the practitioner, may subpoena witnesses and papers in his behalf and, may administer oaths, may compel the testimony of witnesses and may examine witnesses. It may issue commissions to take testimony and the testimony so taken and sworn to shall be admissible in evidence for and against the practitioner. The attorney general shall, upon request, furnish legal assistance to the board. If the board, by a majority vote of its members, shall find the practitioner guilty of any of the charges preferred against him, it may, in its discretion, by written notice to the practitioner, reprimand or otherwise discipline him or it may recommend to the state department of health, in writing, that the certificate of registration of the practitioner be revoked or that it be suspended for a period of time to be set out in the recommendation. If the practitioner shall be found not guilty, the board shall order a dismissal of the charges. Upon receipt of a recommendation, as herein provided, that a certificate of registration be revoked or that it be suspended, the state department of health shall issue a revocation or suspending order, as the case may be, in compliance with such recommendation. One copy of such order shall be sent by registered mail to the practitioner at his last-known address and one copy shall be mailed to the town clerk of the town wherein the practitioner last resided. Such town clerk shall record such order in a book provided by the state department of health for the recording of certificates of registration and shall make a memorandum on the page where such practitioner's certificate of registration has been recorded.

Sec. 4360. Appeal. Any person who shall consider himself aggrieved by the finding of such board may, within thirty days after written notice thereof from such board or from said department, appeal

to the superior court to be held within the county where he resides, which court may grant such relief as to equity may appertain. Such appeal shall not act as a supersedeas of such finding or order unless so ordered either by such board or by the superior court or by a judge thereof. The attorney general shall act as attorney in the public interest in defending against such appeal.

Sec. 4361. Restoration of license. If the judgment against any practitioner convicted in a court as specified in section 4358 shall be subsequently reversed by a court of competent jurisdiction, the board which recommended revocation or suspension of the license or registration of such person shall, upon receipt of a certified copy of the judgment or order of reversal, restore to such person the right to practice, and the state department of health, upon written notice from such board that such right to practice has been restored, shall annul or vacate any order which revoked the license or registration of such practitioner because of such conviction and shall send notice of the fact of such order of reversal and restoration of the right to practice to the town clerk with whom such revocation or suspension has been recorded.

Sec. 4362. Appointment and removal of members of examining boards. In making the appointments to the examining boards, the governor shall not be limited to any list of names which have been submitted to him provided the successors of the members of said boards whose terms of office shall have expired shall be appointed, respectively, from such medical societies or branches of the healing arts as were the members of such boards whose terms of office shall have expired. The governor may remove from office any member of any of said examining boards upon proof of the inability or misconduct of any such member, and, upon such removal, may appoint a successor.

General Provisions

Sec. 4182. Operations to prevent procreation permitted in certain state institutions. The directors of the State Prison and the superintendents of the state hospitals for mental illness at Middletown, Newtown and Norwich, the superintendent of the Mansfield State Training School and Hospital at Mansfield Depot and the superintendent of The Southbury Training School at Southbury are authorized and directed to appoint for each of said institutions two skilled surgeons, who, in conjunction with the physician or surgeon in charge at each of said institutions, shall constitute a board

the duty of which shall be to examine such inmates of said institutions as are reported to them by the warden, or superintendent or the physician or surgeon in charge, to be persons by whom procreation would be inadvisable. Such board shall examine the physical and mental condition of such persons and their record and family history so far as the same can be ascertained, and, if, in the judgment of a majority of such board, procreation by any such person would produce children with an inherited tendency to crime, mental illness, feeble-mindedness, idiocy or imbecility and there is no probability that the condition of any such person so examined will improve to such an extent as to render procreation by any such person advisable, or if the physical or mental condition of any such person will be substantially improved thereby, then such board shall appoint one of its members to perform the operation of vasectomy or oöphorectomy, as the case may be, upon such person. Such operation shall be performed in a safe and humane manner, and the board making such examination and the surgeon performing such operation shall receive from the state such compensation for services rendered as the warden of the State Prison or the superintendent of either of said hospitals or schools shall deem reasonable.

Sec. 4183. Penalty for unlawful operation. Except as authorized by section 4182, any person who shall perform, encourage, assist in or otherwise promote the performance of either of the operations described in said section, for the purpose of destroying the power to procreate the human species, or any person who shall knowingly permit either of such operations to be performed upon such person, unless the same shall be a medical necessity, shall be fined not more than one thousand dollars or imprisoned in the State Prison not more than five years or both.

Offenses Against the Person

Sec. 8363. Attempt to procure miscarriage. Any person who shall give or administer to any woman, or shall advise or cause her to take or use anything, or shall use any means, with intent to procure upon her a miscarriage or abortion, unless the same shall be necessary to preserve her life or that of her unborn child, shall be fined not more than one thousand dollars or imprisoned in the State Prison not more than five years or both.

Sec. 8364. Abortion or miscarriage. Any woman who shall do or suffer anything to be done, with intent thereby to produce upon herself miscarriage

or abortion, unless necessary to preserve her life or that of her unborn child, shall be fined not more than five hundred dollars or imprisoned not more than two years or both.

Sec. 8365. Encouraging the commission of abortion. Any person who shall, by publication, lecture or otherwise or by advertisement or by the sale or circulation of any publication, encourage or

prompt to the commission of the offenses described in sections 8363 and 8364, or who shall sell or advertise medicines or instruments or other devices for the commission of any of said offenses except to a licensed physician or to a hospital approved by the state department of health, or who shall advertise any so-called monthly regulator for women, shall be fined not more than five hundred dollars or imprisoned not more than one year or both.

Sanity as Compared with Insanity

We superintendents of hospitals and asylums for the insane, as a necessary consequence of our calling, live in an atmosphere of mental disease. From morning till night, week after week, month by month, year in and year out our minds are, as it were bathed in the delusions, the morbid exaltations and depressions, the hallucinations, and the diseased imaginations of the inmates of our respective institutions. When in quiet moments we set ourselves to think the chances are we occupy ourselves with some problem in insanity. Our conversation is mostly to lunatics, or about lunatics or lunacy. Among ourselves we discuss the forms, causes, and treatment of mental disease. For our reading we buy books on pathological psychology. In the course of each year each one of us covers reams of paper with letters about our patients, records of cases, drafts of special cases, reports on subjects connected with asylum management, with lectures, essays, or perhaps treatises on the same subject.

Thus insanity in all its phases and aspects becomes to us as the air we breathe; we gradually come to accept it as our proper mental habitat. Sanity we take for granted—think little or not at all about it—dismiss it as something hardly worth dwelling upon because so commonplace and matter-of-course.

But if insanity comes to be to us the one main subject of occupation, and sanity a matter requiring and deserving little or no consideration, we do not on that account rate the insane mental condition as at all comparable in importance to the sane. On the contrary we place the lunatic at an immeasurable distance below the sane man. We go, in this direction, as I shall show further on, far beyond what the facts of the case warrant. We are too apt to draw the line broad and strong and simply take for granted that on the whole the sane man thinks and feels correctly, and that the insane man thinks and feels incorrectly. That is to say, to assume that the sensations, thoughts, and feelings of the sane man are on the whole in accordance with the truth of things; and that the sensations, thoughts, and feelings of the lunatic are, on the whole, more or less out of accordance with the truth of things.

I propose to point out in the first place that on the whole the sense impressions, thoughts and moral states of sane men are very far from tallying the actual objective world—that in many most important respects they not only fall short of representing the truth but that often they go farther than that and furnish absolutely false representations. And that in the second place many mental states which are universally considered as characteristic of disease are in fact much more accurate reflections of the actual objective truth than are the so-called sane mental states which they replace.—Bucke, R. M.: *Sanity*, *Amer J Insanity* 47:17-26, 1890.

The Connecticut Confidentiality Statute

Ben Bursten, M.D.

The concepts of privilege and confidentiality are often confused. Physician-patient privilege, which has had a statutory basis in this country for about 150 years,¹ often controls disclosure only in legal proceedings. Sometimes, as in the Connecticut psychiatrist-patient privilege law enacted in 1961,² disclosure is also controlled in other governmental activities, such as "legislative and administrative proceedings."²⁻⁴ This limited scope of privilege has been asserted by others such as William Josephson, General Counsel of the Peace Corps (as quoted by Menninger and English).⁵ He stated that the rules regarding privilege "relate to a situation in which the course of justice requires the investigation of truth, that is, a judicial or similar proceeding where persons with relevant information are under a legal obligation to testify." Thus, privilege "deals with only part of the problem of confidential communications."⁷

"Psychiatric Confidentiality" is a much broader term which refers to many situations, most of which are not covered by privilege laws.⁵⁻¹¹ Inquiries about patients may come from insurance agents, police, current or prospective employers, social agencies, schools, relatives, etc. The psychiatrist may wish to initiate the divulgence as a therapeutic maneuver, for protection of the patient, for research, data banking, or supervision, or (unfortunately) occasionally for gossip with colleagues—"shop talk." Program directors may require information for administrative planning.

With the diversity of situations inviting divulgence in mind, the Committee on Confidentiality of the New Haven (Connecticut) Area Mental Health Association began in 1968 to work on possible legislation which would be broader than the privilege statute. The New Haven Civil Liberties Union and the Connecticut State Department of Mental Health were simultaneously greatly concerned with the broader issues of psychiatric confidentiality. The three groups, in collaboration with

three professors from the Yale Law School,* drafted the Confidentiality Statute. The bill, introduced by Representative Robert G. Oliver, 104th District and Representative Sarah F. Curtis, 164th District, was enacted by the State Legislature in the spring of 1969. This paper will present some of the issues which were confronted during the development of the statute and some of the features of the law which emerged.

Why a Law?

Very early in our deliberations we confronted the question of whether a law is either necessary or advisable. Some psychiatrists incorrectly felt that these broader situations were covered by the privilege statute. Others felt that "professional ethics" provided sufficient control. The Commissioner of Mental Health had formulated guidelines governing the release of patient information,¹² the State Board of Mental Health had a committee on confidentiality, and many hospitals and clinics throughout the state had developed policy statements regarding divulgence of patient information. It was feared that a law might be too rigid and restrictive, thus depriving the psychiatrist of freedom to use discretion in therapeutic and other professional activities.¹³ Finally, it was feared that to air the question of confidentiality in the legislature might endanger the existence of the recently enacted privilege statute.

On the other hand, there were potent reasons for drafting legislation. While the ethical intentions of psychiatrists are high, in practice there is an un-

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evenness of standards. Although Goldstein and Katz³ felt that violations of ethical obligations "might lead to the imposition of sanctions against the psychiatrist by the profession itself," it is doubtful that such sanctions have been imposed with any frequency. Further, even within the limits of ethical practice, psychiatric communications are frequently divulged to other professionals who have varying standards and different orientations to the issue of confidentiality. Often, psychiatric communications are ethically shared with non-professionals, such as employers, for whom confidentiality does not exist as an important issue. "Professional ethics," then, even when adhered to, can only meaningfully be applied to the profession which sets the standards of these ethics.

New technological developments have altered the implications of psychiatric data collection. Computerized data-storage and retrieval, with its great potential for improving hospital administration and research, must be examined also from the viewpoint of confidentiality. There can be no doubt that storage of records in a computer will make them less accessible to unauthorized persons than the current practice of storage in "locked files" of the hospital record room. However, who becomes authorized may vary with the social or political climate. In 1963, an executive order¹⁴ gave the House Un-American Activities Committee authorization to review supposedly confidential income tax and other records. While this problem could occur with or without the computer, new technology creates the ability to amass and store infinitely more data on more people. Because of centralization, these data can be retrieved by newly "authorized" people or agencies more easily (and possibly more secretly). The clash between these possibilities and the right of privacy occurs whether the data, gathered in a clinical setting, is used for administrative or for research purposes.^{13, 15-18} The balance between the needs of administration and research on the one hand and the right of privacy in a free society on the other is a *public issue*. Decisions in this area are not to be left to mental health professionals or administrators because the implications of these decisions go far beyond the area of professional standards and into the area of public policy.

The basis of privacy in American law stems from Amendments 1, 3, 4, and 5 of the U.S. Constitution and has been buttressed by a host of additional laws and court decisions.¹⁶⁻¹⁷ Legislators are vitally concerned with the conflict between the data col-

lection needs of professionals and the need to maintain privacy. The 89th Congress refused to sanction a National Data Bank and currently many U.S. Representatives under the leadership of Jackson E. Betts¹⁹ of Ohio, are questioning the data collection methods and uses of the U.S. Census. With the large number of people supplying personal data to psychiatrists and other health and welfare personnel, it is entirely possible that the will of the 89th Congress could be circumvented and a "National Data Bank" could be established under the aegis of public health agencies. Thus, it is proper that the uses to which psychiatric communications are put be subject to legislative scrutiny and control.

The emergence of the concept of community psychiatry has placed the mental health worker* in a position *vis-a-vis* the general public which differs greatly from the position of the physician-practitioner in the consulting room. Mental health workers with access to clinical psychiatric data have multiple roles; at times they are in a therapeutic relationship to individuals, at times they consult with the highest levels of government. They are being exhorted to be active participants in social and political action programs, and the definition of mental health activities is being broadened far beyond the clinical model.²⁰⁻²² In the community role, the mental health worker is advised to drop his traditional clinical stance of disciplined non-involvement and to become passionately involved in the alleviation of social ills.²³⁻²⁴ He may now find himself in the position where he can use psychiatric information, revealed in a clinical setting, for political (even partisan political) purposes. Not only can this result in a political disadvantage for the patient involved, but the worker can also funnel "confidential" information into the strategy rooms of one side in a social conflict situation. While it will never be possible absolutely to prevent this type of confidentiality breach, it is clearly in the public interest to attempt to limit it through legislation. Indeed, as our professional activities have a broader and broader interface with public issues, we must expect more public and legislative concern with these activities.

* For the purposes of this paper, "mental health workers" includes mental health professionals, such as psychiatrists, psychologists, social workers, occupational therapists, nurses, etc., and non-professionals, such as public relations personnel, relatively less trained aides, neighborhood field workers, secretaries, etc.—all of whom may have access to clinical data gathered in a community mental health center.¹⁴

Features of the Statute

Who is included: A confidentiality statute must designate the people and situations to which it applies. In our law, the "patient" is specifically defined as a "person who communicates with, or is treated by a psychiatrist in diagnosis or treatment . . ." The broadest coverage was sought here. The former Connecticut law on privilege had defined "patient" as a "person who . . . consults a psychiatrist. . ." The office of the State Attorney General had interpreted "consult" to mean voluntary, active consultation. It was felt that since patients in state hospitals did not exercise free will in consulting a psychiatrist, their communications were not covered by the law. Although court decisions in other states had upheld the right of privilege of patients in public mental hospitals,²⁵ and in one case,²⁶ privilege was upheld even when the patient had specifically asked *not* to be treated by the physician, we felt that the wording of the new statute should be unambiguous in its coverage of all persons in professional relationship with a psychiatrist. This intention was also carried out by our defining "mental health facility" in broadly inclusive terms.

In addition to defining "patient" it is important to consider the type of professional with whom he has the relationship. Confidentiality is essential* not only to the psychiatric relationship; it is often important in the relationship with a psychologist in independent practice, with the social agency which may not have psychiatric supervision, with clergy, school guidance counsellors, non-psychiatric physicians, etc. If these relationships are to have a beneficial impact on society, the means of maintaining confidentiality must be provided. Indeed, in some jurisdictions, privilege is extended to clients of some of these relationships.^{3, 27}

In our law, we have chosen a narrow range of professional relationship. We include only a psychiatrist or those "who participate under the supervision of the psychiatrist." This choice was not based on the merits of the case for or against including other professional relationships; it was based solely on strategic considerations. In a year when the public was so concerned with law and order, with wire-tapping bills and court testimony con-

sidered so important, we felt it unwise to attempt to broaden the coverage of the previous privilege statute; our wording regarding the professions included has been taken directly from that act. That this decision had merit was partly borne out by the fact that another bill which would have extended privilege to the clergy died in committee. Thus, the question of extending privilege and confidentiality guarantees to clients in other professional relationships has not been researched by our group. As other disciplines increasingly realize their professional potentials, we can expect this question to be reopened in the near future.

Consent: Just as privilege is given to the patient rather than to the psychiatrist, the principle underlying our statute is that the patient must have the right to determine to whom his confidences are divulged. The basic instrument for guaranteeing this right is the requirement of consent. Ideally, consent should be freely given and the patient should know all the implications of giving consent.¹⁶ These ideals can never be attained; they can only be approached.

There is a kind of coercion built into the help-seeking situation. Although our law requires that the patient must be told he can have treatment even if he declines to sign a consent form for divulgence to (say) a researcher, a needy person in a time of stress does not often feel comfortable about refusing to sign a consent form when asked to sign by the person from whom he expects help. As treatment (and trust) progresses and the patient's initial distress diminishes, he may wish to reconsider the consent given in more stressful times. The law provides for the subsequent withdrawal of consent.

Likewise, it is impossible for the patient to know all the implications of divulgence of his communications. The law attempts to approach the problem of "informed consent" in two ways. Firstly, the consent must specify in writing to whom the information is going and to what use it will be put. The person to whom the divulgence is made will have a copy of the consent form so that he may know what use of the information has been authorized. Secondly, confidentiality travels with the information which is divulged. The receiver must be informed that the confidentiality of the information is protected by law; he cannot transmit it further without obtaining specific consent of the patient. For example, if a patient consents to his psychiatrist's furnishing some data to an employer, the employer cannot divulge this material to another em-

* The concept underlying the granting of confidentiality is that the patient expects it, it is "essential to psychiatric treatment,"¹⁸ and psychiatric treatment is of importance in our society. While the patient may agree to disclosure beyond the consulting room, most patients will either demand some limit on the breadth of disclosure or will themselves impose some limit on what they reveal.

ployer, a credit bureau, or the police, without getting specific consent from the patient. Thus, the patient can be reasonably informed about who has access to his confidences and he can control their spread. In addition to giving the patient more control, this provision has educational value. By calling attention to the issue of confidentiality, it tends to inform various professionals and non-professionals and thus tends to unify standards of confidentiality.

Exceptions: Although the right of the patient to control divulgence underlies this law, we defined certain situations where information may be divulged without the patient's consent. The principal situation is where the divulgence is deemed necessary in order to carry out a therapeutic program. This situation is the rule in most modern hospitals where group meetings and team therapeutic efforts are based on the sharing of information about patients. The necessity to obtain consent for each divulgence would be unduly cumbersome and would undermine the therapeutic effort. Then, too, the difference between overt and covert messages must be considered. For example, a patient who is strongly tempted to run away from the hospital may, without realizing it, wish the hospital to help him control himself. He may "confide" to an aide that he has been thinking of running away; despite his protests he may be relieved when the aide divulges this "confidence". The requirement of consent would deprive the tempted patient of this help. Similar situations may arise from time to time in out-patient practice as well. The danger, of course, is that the psychiatrist may misinterpret the signs. In his zeal to achieve a therapeutic goal the doctor may divulge a confidence that was not intended for transmission and which might cause a patient considerable embarrassment. To steer a reasonable course between these two situations, we felt it wise to allow the psychiatrist considerable discretion in what he divulges providing that the divulgence is for therapeutic purposes. We further stipulated that the patient must be informed before the disclosure is made. In this way perhaps the unconscious intent or the utility of the disclosure can be further clarified. We felt that the patient is at least entitled to know that the divulgence will be made. If he finds himself with a psychiatrist overly prone to use divulgences as a therapeutic technique, he may choose to change psychiatrists.

Regarding the collection of fees, the Group for the Advancement of Psychiatry⁸ has cautioned that turning a patient's account over to a collection

agency may be a breach of confidentiality. While this may be so, we do not feel that where a patient has refused to pay for services, the psychiatrist should be prevented from collecting his fee because "the patient should be able to control who knows he is in psychotherapy." The patient can control this by paying his bill. However, there are some psychiatrists who routinely use commercial billing agencies. Likewise, the State Department of Mental Health may routinely use other State Agencies to handle collection of fees. For these administrative purposes, we limit the disclosures to names, addresses and fees.

The exceptions dealing with testimony (the loss of the patient's privilege) will not be discussed here. They follow the exceptions in the 1961 statute and have been commented upon by Goldstein and Katz.³ It should be pointed out, however, that it was not our intent to curtail the privilege granted by the previous statute; our legislation repealed the 1961 law only in order that it could be included in the present statute—thus avoiding two confidentiality laws.

Research and administrative needs: To utilize the advantages of computerized data storage and retrieval systems, an institution must use them for all its patients. For example, there is little value in computerizing the records of only those patients who consent while the remainder of the records are stored in the more cumbersome record files. Similarly, the use of only records of consenting patients in a research project creates a biased sample.^{8, 20} On the other hand, the entire staff of a mental health facility usually has free access to files and records, and anyone can conceivably be authorized to see records (or given a temporary position on the staff). Thus, we are caught between hamstringing administration and research by requiring consent for record keeping and the possibility of widespread dissemination of confidential material without consent under what might be designated in a vague way "administrative purposes."

Under the law, people wishing to do research must submit their plans to the Director of the facility or to his designee. The facility must share responsibility for confidentiality of patient information. Beyond this, however, we have placed limits not on the dissemination of psychiatric material to be used in research or administration, but on the divulgence of the *identification* of the patient to whom the material pertains. Names, specific addresses, telephone numbers, social security numbers, or other reasonably identifiable codes may not be

taken from the psychiatric facility which treated the patient. Thus, records from several state hospitals may be stored in a centralized data bank in another state under a code number, but the key to the code must remain in the hospital of origin. Sociologists, political scientists and others may be authorized to have access to records for bona fide research purposes (as is the current practice), but they may not take patient-identifying information from the premises.

A further protection is provided by the wording of Section 6. The mental health facility *may* divulge identifiable information to the Commissioner of Mental Health. While this section encourages cooperation between the facility and the commissioner, it does not make the transmission automatic or mandatory. It allows for discussion between the parties to ascertain if the divulgence is necessary for administration, planning, or research.

Summary

Recognizing the limited scope of the privilege statute, we formulated a law which would more generally preserve the confidentiality of information divulged in the clinical psychiatric setting. With few exceptions, the patient must consent to the divulgence of this information, and those who receive such information cannot divulge it further without the patient's consent. We have attempted to steer a reasonable course between the patient's right of privacy on the one hand and the therapeutic, research and administrative needs for divulgence on the other.

Appendix The Statute*

SECTION 1. Section 52-146a of the general statutes is repealed and the following is substituted in lieu thereof: As used in this act, "patient" means a person who communicates with, or is treated by, a psychiatrist in diagnosis or treatment; "psychiatrist" means a person licensed to practice medicine who devotes a substantial portion of his time to the practice of psychiatry, or a person reasonably believed by the patient to be so qualified; "authorized representative" means a person empowered by the patient to assert the confidentiality of communications or records as established by this act,

* The statute is quoted verbatim except for the omission of parts of section 1 which indicate the portions of the former privilege statute (52-146a) which have been replaced. The omission here in no way alters the context of the statute.

or, if the patient is incompetent to assert or waive his privileges hereunder, a guardian or conservator who has previously been appointed or is appointed to act in place of the patient except that the nearest relative of such a patient may maintain the confidentiality until such time as such guardian or conservator has been appointed, or, if the patient is deceased, his personal representative or next of kin; "consent" means consent given in writing by the patient or his authorized representative; "communications and records" means all communications relating to diagnosis or treatment of the patient's mental condition between patient and psychiatrist, or between members of the patient's family and psychiatrist, or between any of the foregoing and such persons who participate under the supervision of the psychiatrist in the accomplishment of the objectives of diagnosis and treatment, or records thereof, oral or written, wherever made, including communications and records which occur in or are prepared at a mental health facility. "Mental health facility" includes any hospital, clinic, ward, psychiatrist's office or other facility, public or private, which provides inpatient or outpatient service, in whole or in part, relating to the diagnosis or treatment of a patient's mental condition. Communications and records "identify" a patient and such communications and records are "identifiable" if, in connection therewith (1) names or other descriptive data are used from which a person acquainted with the patient might reasonably recognize such patient as the person referred to or (2) codes or numbers in general use outside the mental health facility which prepared such communications and records are used.

SECTION 2. All communications and records as defined in section 1 of this act shall be confidential and shall be subject to the provisions of this act. Any consent given hereunder shall specify to what person or agency the information is to be disclosed and to what use it will be put. Each patient shall be informed that refusal to grant consent will in no way jeopardize his right to obtain present or future treatment except where disclosure of such communications and records is necessary for treatment of such patient. The patient or his authorized representative may withdraw any consent given under the provisions of this section at any future time in a writing addressed to the person or office in which the original consent was filed. Withdrawal of consent shall in no way affect communications or records disclosed prior to notice to such withdrawal.

SECTION 3. Except as hereinafter provided, no person shall disclose or transmit any of the foregoing communications or records where the patient is identifiable, or the substance or any part or parts or any resume thereof, to any person, any corporation or any governmental agency, municipal, state or federal, without the consent of the patient or his authorized representative.

SECTION 4. Consent of the patient shall not be required for the disclosure or transmission of communications or records of the patient in the following situations as specifically limited: (a) Communications or records may be disclosed to other persons engaged in the diagnosis or treatment of the patient or may be transmitted to another mental health facility to which the patient is admitted for diagnosis or treatment if the psychiatrist in possession of the communications or records determines that such disclosure or transmission is needed to accomplish the objectives of diagnosis or treatment. The patient shall be informed that such communications or records will be so disclosed or transmitted. For purposes of this subsection, persons in professional training are to be considered as engaged in the diagnosis or treatment of the patients. (b) Communications or records may be disclosed when the psychiatrist determines that there is substantial risk of imminent physical injury by the patient to himself or others or when a psychiatrist, in the course of diagnosis or treatment of the patient, finds it necessary to disclose such communications or records for the purpose of placing the patient in a mental health facility, whether by certification, commitment or otherwise, provided the provisions of this act shall continue in effect after the patient is in such facility. (c) The name, address and fees for psychiatric services to a patient may be disclosed to individuals or agencies involved in the collection of fees for such services. In cases where a dispute arises over such fees or claims, only such additional information as is needed to substantiate the fee or claim shall be disclosed. (d) Communications made to or records made by a psychiatrist in the course of a psychiatric examination ordered by a court for good cause shown may be disclosed at judicial or administrative proceedings in which the patient is a party, or in appropriate pretrial proceedings provided such court finds that the patient has been informed before making such communications that any communications will not be confidential and provided such communications shall be admissible only on issues involving the patient's mental condition. (e)

Communications or records may be disclosed in a civil proceeding in which the patient introduces his mental condition as an element of his claim or defense, or, after the patient's death, when such condition is introduced by any party claiming or defending through or as a beneficiary of the patient and the court or judge finds that it is more important to the interests of justice that the communications be disclosed than that the relationship between patient and psychiatrist be protected.

SECTION 5. Persons engaged in research may have access to psychiatric communications and records which identify patients where needed for such research, provided such communications and records shall not be removed from the mental health facility which prepared them. Data which does not identify patients or coded data may be removed from a mental health facility provided the key to such code shall remain on the premises of the facility. Where the person engaged in research is to have access to communications and records, the research plan first shall be submitted to, and approved by, the director of the mental health facility or his designee. The mental health facility, together with the person doing the research, shall be responsible for the preservation of the anonymity of the patients and shall not disseminate data which identifies a patient except as provided by this act.

SECTION 6. Any mental health facility may transmit information and records, if requested, to the commissioner of mental health pursuant to his obligation under section 17-211 of the general statutes of maintain, subject to the approval of the board of mental health, the overall responsibility for the care and treatment of the mentally ill. The commissioner of mental health may collect and use such information and records for administration, planning or research, subject to the provisions of section 5 of this act. The commissioner of mental health may enter into contracts within the state and into interstate compacts for the efficient storage and retrieval of such information and records. Identifiable data shall be removed from all records and reports of information before issuance from the mental health facility which prepared them, and a code, the key to which shall remain in possession of the the issuing facility and be otherwise available only to the commissioner of mental health for purposes of planning, administration or research, shall be the exclusive means of effecting an identification of patients. The key to such code shall not be available to any data banks in which the informa-

tion is stored or to any other persons, corporations or agencies, private or governmental.

SECTION 7. All written communications or records disclosed to another person or agency shall bear the following statement: "The confidentiality of this record is required under chapter of the Connecticut general statutes. This material shall not be transmitted to anyone without written consent or other authorization as provided in the aforementioned statutes." A copy of the consent form specifying to whom and for what specific use the communication or record is transmitted or a statement setting forth any other statutory authorization for transmittal and the limitations imposed thereon shall accompany such communication or record. In cases where the disclosure is made orally, the person disclosing the information shall inform the recipient that such information is governed by the provisions of this act.

SECTION 8. Any person aggrieved by a violation of this act may petition the superior court for the county in which such person resides, or, in the case of a nonresident of the state, the superior court for Hartford county, for appropriate relief, including temporary and permanent injunctions, and such petition shall be privileged with respect to assignment for trial. Any person aggrieved by a violation of this act may prove a cause of action for civil damages.

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Connecticut Medicine

Editorials

Legal Meanings of Causation

*Find out the cause of this effect
Or rather say the cause of this defect
For this effect defective comes by cause.*

—Hamlet-Act II-Scene 2.

Disagreements between medical and legal evaluations of cause and effect relationships are frequent. They seem to be traceable to different emphasis placed by each profession in its consideration of the factors involved. Accordingly, it is highly desirable for members of each profession to understand each others reasoning in arriving at a conclusion.

In law¹ "cause" incorporates not only concepts such as produce or precipitate damage or disability de Novo, but of more practical importance includes also aggravation, accelerate and contribute, elements of causation inherently foreign to the scientific thinking of physicians. The law is much less exacting than science. It merely seeks a cause of the individual condition for which there is indeed opinion to support a probable or likely connection.

In legal considerations of cause emphasis is primarily directed to whether something more likely than not occurred. In other words, there must be a probable connection. "Possible" connections is insufficient to satisfy the burden of proof legally placed on the claimant. Thus in every instance medical and therefore legal acceptance of causation should satisfy certain minimal scientific criteria.

First of all the diagnosis of injury or disease must be established with reasonable certainty and confirmed whenever possible by objective means. The legally important alleged causative element must be one recognized scientifically as a competent-producing cause of the disorder found. Conversely the condition diagnosed must be one generally recognized medically as a possible resultant of the alleged exposure. The time interval between exposure and medical evidence of damage must be consistent with currently accepted scientific concepts of pathogenesis.

A case in point are the criteria set out for the relation between physical strain and a heart attack. Some heart attacks can and most often

do occur as a natural consequence of underlying coronary artery disease. It is necessary to differentiate between a natural cause and a strain origin for an attack. This is why the criteria holds that the strain must be severe, unusual for the persons ability, and the attack must begin immediately with the strain. The attack must be documented by objective criteria such as the electrocardiogram and other evidences of heart injury. If a person underwent a strain without symptoms, and a time interval occurred before the heart attack, a proposed cause and effect relationship could not hold because it would not be consistent with accepted scientific concepts of pathogenesis.

In the above situation we are dealing with a pre-existing disease-coronary artery disease. The law in its evaluation has decreed that a defendant is not entitled to a perfect specimen on whom he may inflict injury. Legally, it is immaterial that trauma would not have resulted in injury or disability had the victim been in good or average health. "The victim is taken as he is found" pervades all of our civil and criminal law. The question above was not, however, whether the patient is normal, but rather whether an injury really did result in a damaged heart as a result of his effort.

The laws task appears to be limited in terms only as to whether an event played a role in the individual case not in evaluating its qualities or characteristics. One notable exception exists in those jurisdictions where work related injuries, particularly heart attacks, deemed to have "arisen out of" the employment must also result by accident from physical or psychologic "stress" extremely unusual for the employment.

What should be the physicians position with regard to apportionment of the particular incident in relation to the patient's overall physical condition? It is clear that legal assessment of benefits or damages fails to take cognizance of the relative role played by each of the various elements that in combination have led to death or disability. The actual event may have been minor in relation to the patients overall physical condition and the physician might believe strongly that damages should be allocated in

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Composition: Each chewable, fruit-flavored, scored tablet contains: 16 mg. phenobarbital (warning: may be habit-forming); 0.1 mg. hyoscyamine sulfate; 0.02 mg. atropine sulfate; 0.007 mg. scopolamine hydrobromide; 40 mg. simethicone.

Contraindications: Hypersensitivity to barbiturates or

belladonna alkaloids, glaucoma, advanced renal or hepatic disease.

Precautions: Administer with caution to patients with incipient glaucoma, bladder neck obstruction or urinary bladder atony. Prolonged use of barbiturates may be habit-forming.

Side effects: Blurred vision, dry mouth, dysuria, and other atropine-like side effects may occur at high doses, but are only rarely noted at recommended dosages.

Dosage: Adults: One or two tablets three or four times daily. Dosage can be adjusted depending on diagnosis and severity of symptoms. Children 2 to 12 years: One half or one tablet three or four times daily. Tablets may be chewed or swallowed with liquids.



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proportion to the percentage role played by the causative element.

Sagall advises that the law recognizes the impracticability of such gradation and is impressed with the fact that prior to exposure which triggered disability or death, the claimant was able to function actively and usefully in society whereas subsequently he was not. Thus in most jurisdictions full legal responsibility is assigned for changes in physical or economic status resulting from work injury or neglect conduct of a defendant.

L.H.N.

Reference

1. Sagall, E. L., Medical vs Legal Meanings of Causation Medical Counterpoint 2: 9, March 1970.

When Does Life Begin?

Much of the debate that has been provoked by the legalization of abortion in a number of states centers about the question, when does life begin. The AMA referred this question to a number of authorities in medicine, religion, and law.¹ As biologists we know that fertilization of the ovum restores the normal number of chromosomes necessary for the beginning growth of a new individual. To survive, this individual needs a very specialized environment for nine months and then extended care for an indefinite period under appropriate conditions. Although life is present in each zygote and a new individual may be said to begin with fertilization unless the new individual develops under appropriate conditions we do not really have a personality at fertilization but only a potential one. When does it become a real one?

Professor J. W. Montgomery for the Protestants takes the position from biblical teaching Exodus 21: 22-25, that the point of origin of individual human life is the fertilized egg. This first cell is already the embryo of an autonomous human being—in spite of its fragility and its immense needs, a genuinely living being has come into existence. However, although the potential resides in each zygote, when a fertilized egg becomes a personality is left unanswered.

Rev. James T. McHugh of the United States Catholic Conference considers it this way. Roman Catholic moral teaching has traditionally held that human life begins when God impresses the soul, the distinguishing feature of human existence. In the past various theories have been

advanced as to when the soul is infused. Aquinas posited 40-80 days after fertilization. Since we do not have the precise moment of this occurrence the Theologian chooses the safest course and assumes that human life is present from the time of fertilization and the fetus must be accorded all the rights of the human person from the moment of conception.

Rabbi David Graubart points out that according to Exodus 21: 22-23 the death of an unborn child is punishable by fine only because the unborn child is not considered a living person. The text is further interpreted in the Rabbinic literature where we are told that when a woman is having difficulty in giving birth it is permissible "to cut up the fetus inside her womb and take it out limb by limb." The commentaries further tell us that "as long as the child did not come into the world it is not called a living being and it is therefore permissible to take its life in order to save the life of the mother." Rabbi Graubart goes on to say that to all the authorities in Judaism, the embryo is not considered a living being until after the first three months of conception.

Professor A. L. Knutson, a behavioral scientist thinks that when a specific human life begins is really not a question for science but depends upon one's ethical belief. It all depends upon: how one defines a human life and on this we are no closer to agreement than were the Greeks. The definitions employed for the purpose of vital statistics and death registrations in nearly all states require that stillbirths be registered when the criteria of 20 weeks or more of gestation is satisfied. Most states in addition employ the criteria of heart action, breathing, and movement of voluntary muscle.

Death registration Professor Knutson points out identifies the stillborn as a human death and accordingly requires that the disposal of the body be in accord with state regulation as regards human burial or cremation. There are state definitions regarding the beginning of a human life and agreed professional action in conformity to those definitions. In some settings definitions may be employed which define a human life as beginning at an earlier period than that defined by law.

Studies of health professionals revealed wide differences in their personal beliefs. About half said a new life is a human life by the end of the first trimester. Thirty percent thought it was

during the second or third trimester or during birth and 20 percent at viable birth or later. Most important, however, are beliefs about the definitions for human life, the acceptance and definition of the concept of a human soul and the time of the infusion of the soul into the new life. It appears that religion and also sex appear to be significant factors related to such beliefs whereas professional education and experience do not seem to contribute greatly to their formation.

The legal position is stated by Douglass Stripp, an attorney. In most legal systems legal personality begins at live birth, but there are several important exceptions to this general rule. One is the law of property which grants to an unborn fetus a conditioned legal personality, so that if born alive it may immediately receive a legacy, obtain an injunction, have a guardian, or even be an executor. A steadily growing number of cases in tort law allows a fetus to maintain an action for the death of a parent while it is still in utero. In 1965 8 American courts when dealing with cases in tort law followed a biological approach and now believed that life begins at conception thereby according legal personality to the zygote.

In the area of criminal law there is yet another exception to the general statement that life begins at birth in that our state laws customarily define homicide as the killing of a fetus after it is viable. The law then first asks for what purpose it is that we wish to know when life begins. Accordingly, we cannot positively say that a future ruling will follow an earlier decision since our legal system proceeds on an ad hoc basis.

L.H.N.

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1. When does life begin: JAMA 214, 1893, December 7, 1970.

Hiatus Hernia

Hiatus hernia is a common benign and frequently asymptomatic lesion. At the Jewish Hospital in St. Louis¹ one out of three patients having an examination of the upper gastrointestinal tract will show such a lesion. Most are small without evidence of gastroesophageal reflux and are therefore asymptomatic. The techniques which are employed by radiologists to demonstrate a hiatus hernia range from 15 percent Trendelenburg with valsalva maneuver to hav-

ing the patient attempt to touch his toes in view of the fluoroscope to further exaggerate intraabdominal pressure. If an abdominal girdle containing an air bladder is used to increase abdominal pressure herniation can be produced in almost everyone at pressures of 80-100 mm kg. If a hernia is produced by such a high pressure maneuver such patients need to be observed in various recumbent positions to detect spontaneous herniation or gastroesophageal reflux and without a demonstrable hernia. In such a situation, however, the patient will not show an intra-abdominal segment of the esophagus.

Not everyone who has a hiatus hernia has symptoms and most individuals in fact are unaware of its presence. Symptoms occur only in patients with sliding hiatus hernia, and consist of heart burn, vomiting, or regurgitation. Many also complain of intestinal fulness and epigastric pain. One fifth will have dysphagia and as many more have bleeding which results from ulceration in the herniated stomach where it rides over the edge of the hiatus. Other diseases found in association with hiatus hernia are peptic ulcer, cholelithiasis, and coronary heart disease all of which produce symptoms often indistinguishable from the hernia. The symptoms can all be explained by the esophagitis caused by the prolonged regurgitation of the acid secretions from the stomach into the lower esophagus. The resulting inflammation can lead to esophageal spasm and in time even to stricture, thus producing dysphagia.

Since the symptoms arise from reflux of gastric contents into the esophagus thus leading to esophagitis, the question arises what causes the reflux? To understand this, it is necessary to recall the anatomical arrangement normally existing to prevent reflux. The esophagus below the diaphragm enters the stomach at an oblique angle producing a flap-valve action. This occludes the abdominal part of the esophagus during increased intragastric pressure. In addition the crus of the right hemidiaphragm forms a sling around the esophagus and when the diaphragm contracts this acts as a pinchcock which can occlude the esophagus. In addition the segment of the esophagus extending from the gastroesophageal junction to a point 2-3 cm above the diaphragm is in a state of consistent tonic contraction when there is no swallowing activity. This increased intra luminal pressure is a physiological phenomenon which acts as a barrier be-

tween the stomach and esophagus to prevent reflux of gastric contents.

In a patient with hiatus hernia the esophagus enters the stomach directly, not tangentially. The diaphragm sling no longer prevents reflux into the esophagus and the intra-abdominal segment of the esophagus is no longer present. The stomach is now above the diaphragm and pressure in it is higher than in the esophagus. At the end of inspiration the patient is actually aspirating contents from the stomach back up into the esophagus. All the mechanics that normally prevent the contents of the stomach from being regurgitated into the esophagus have been disrupted.

The question then arises why do not all patients with a hiatus hernia have symptomatic reflux. The answer appears to be that no reflux will occur if the tonic contractions in the wall of the esophagus are strong enough to overcome the handicap and maintain a pressure in the lower esophagus which is higher than in the stomach. Thus, X-ray demonstration of presence of gastroesophageal reflux is probably the most important single determination in evaluations of the clinical significance of a hiatus hernia.

As far as therapy is concerned the experience seems to be that most patients with asymptomatic hiatus hernia respond fairly well to medical therapy and can live a relatively comfortable life. The treatment consists of neutralizing gastric acid, avoiding foods that stimulate acid secretion, and reduce the factors likely to cause esophageal reflux. This is accomplished by avoiding activities which will increase intra-abdominal pressure and by sleeping with the head and chest elevated. Obviously, if such measures are of no avail and the patient continues to have troublesome symptoms and especially if dysphagia develops one is forced to consider a surgical procedure that will have as its primary objective abolition of the gastroesophageal reflux.

The surgeon now can afford relief of symptoms in 95 percent of patients. As a result of the work of Dr. Baue at the Jewish Hospital in St. Louis the procedures require reconstruction of the normal anatomic arrangements required to prevent reflux. The sling fibers of the right crus of the diaphragm that surround the esophagus and support it need to be restored. The segment of the esophagus within the peritoneal cavity must be

replaced. The esophagus must be brought into the stomach at an acute angle to prevent reflux. The rosette of mucosal folds at the esophageal-gastric junction must be restored since normally this helps to produce a seal between the esophagus and stomach. Such an operation helps to restore the lower esophageal sphincter or high pressure zone in the lower esophagus.

Before Dr. Baue's contribution to repair of a hiatus hernia, failures occurred in 25 per cent of patients operated upon. His clarification of the anatomic and physiological factors involved in successful repair have reduced surgical failures to less than 5 per cent. The surgical procedure is also helpful in symptomatic patients with a patulous cardia in which there is free reflux with a wide esophagogastric junction but without evidence of an anatomic hiatus hernia. Now it can be stated as Dr. Baue does, "would you rather sleep sitting up on one of these foam rubber wedges for the rest of your life or have an operation to get rid of the problem."

L.H.N.

Reference

1. Medical and Surgical Aspects of Hiatus Hernia: Therapeutic Ground Rounds Number 26.

Clinical Application of the Interferon System

The major natural defense mechanism in man and animals against viral diseases is the interferon system. This appears in the body within a few hours after virus invasion. It can limit the spread of infection through the blood stream and play a major role in recovery from established viral infection. Since 1957 when Isaacs and Lindenmann discovered interferon, much work has been done and out of it has come a rationale for an entirely new approach to the treatment of viral disease, induction of the synthesis of interferon in the body in order to stimulate the cell's natural defense mechanism. When the virus chromosome was established as the probable natural inducer of interferon during virus infection, attempts were made to find a drug that would mimic the virus nucleic acid and specifically act as interferon inducers. A mimicking synthetic nucleotide, polyinosinic acid polycytidylic acid (Poly (I.C.)) was found to be successful in animals and is now being readied

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Each Larobec tablet contains:

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Cyanocobalamin (vitamin B ₁₂)	5 mcg
Folic acid	0.5 mg
Ascorbic acid (vitamin C)	500 mg

Description: For prophylactic or therapeutic nutritional supplementation concomitant with levodopa therapy in patients with Parkinson's disease and syndrome, Larobec provides high potency dosages of the major B-complex vitamins, without pyridoxine (vitamin B₆) which has been reported^{1,2} to reduce the clinical benefits of levodopa therapy. B-complex vitamins are essential in the anabolism of carbohydrate and protein and in hematopoiesis. Larobec also contains therapeutic quantities of ascorbic acid, a substance involved in intracellular reactions such as tissue repair and collagen formation.

Indications: Larobec is indicated for supportive nutritional supplementation when a water-soluble vitamin formula (without pyridoxine) is required prophylactically or therapeutically in patients under treatment with levodopa.

Warning: Administration of vitamin B₆ may be required if signs of pyridoxine deficiency develop. Larobec is not intended for treatment of pernicious anemia or other primary or secondary anemias. Neurologic involvement may develop or progress, despite temporary remission of anemia, in patients with pernicious anemia who receive more than 0.1 mg of folic acid per day and who are inadequately treated with vitamin B₁₂.

Dosage and Administration: One or two tablets daily, as indicated by clinical need.

How Supplied: Orange-colored, capsule-shaped tablets, imprinted Roche 73; bottles of 100.

References:

1. Duvoisin, R. C., et al.: *Trans. Amer. Neurol. Assoc.*, 94: 81, 1969.
2. Cotzias, G. C.: *J.A.M.A.*, 210:1255, 1969.

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for trials as a therapeutic agent against viral infections.

The interferons produced by animal cells are proteins which are among the most active of all biological substances. The interferons produced by a variety of all types and species are not remarkably different. Different viruses produce the same interferon in an animal and interferon induced by one virus will protect the animal against many different viruses. However, interferon seems to be species specific. For example, chick interferon will not protect rabbits from viruses, but monkey interferon does give some protection to humans. Thus the information for interferon synthesis resides in the animal cell and not in the inducing virus.

Apparently interferon does not directly inactivate viruses and therefore infected cells in an animal do not survive. However, the interferon which they produce as a result of the infection is excreted and reacts with other cells to induce their resistance to virus. It is in this manner that interferon can protect an animal from virus infections and promote recovery from established infections even though the actual mechanism is still speculative.

In man interferon appears during all viral infections including vaccination with an attenuated strain of measles virus. Its administration to humans reinforces the natural defense mechanism. For example, monkey interferon protects against vaccinia. Human interferon was found prophylactic in influenza. Interferon in infants effectively controlled cytomegalic virus infection which is otherwise fatal.

Interferon has several advantages for clinical use. It is only weakly antigenic, and repeated doses of interferon can be administered and resistance to virus occurs each time. In addition, little or no toxicity to humans occurs when properly purified interferon preparations are used. Since animal interferons are inactive in humans, the therapeutic interferon must be derived from human or simian sources.

Until interferon becomes available for clinical use, a search is on for substances which could induce interferon. Out of this search came the knowledge that double-stranded RNA could induce interferon. Poly (I.C.) is such a substance with high activity in the prevention of experimental virus infections. It also has been shown

to be effective in treating viral infections that were already established in an animal. In rabbits, keratoconjunctivitis is a severe disease which, however, when treated with poly (I.C.) leads to recovery without toxic effects. This same inducer reduced the incidence of rhinovirus infection in man when instilled into the nose. It has been used to treat usually fatal viral infections herpes simplex encephalitis and subacute sclerosing panencephalitis with success. Full immunity, however, was not achieved because the dosage of poly (I.C.) was too low.

Poly (I.C.) is now being intensively studied in the treatment of cancer. In mice it caused a reduction in rate of growth of tumor so that animals survived longer. In 2 cases the tumor regressed and in one it disappeared. It also inhibits animal tumors caused by carcinogens. The success of poly (I.C.) treatment of tumors in man has been limited thus far. Perhaps this is due to the low dosages used. Another reason is that human serum contains an enzyme which destroys poly I.C. thus reducing its effectiveness. The problem now is to prevent degradation of the inducer and also to potentiate its action. Perhaps there will be found a synthetic inducer that will be resistant to the degradative action of human serum.

Because of the possible toxicity of poly I. C. it may not be the most effective antiviral agent for use in man, although it is relatively inexpensive and easy to make as compared to the inaccessibility of human interferon. Extensive clinical trials are being conducted on an international scale. In this country extensive clinical studies are being conducted with poly I.C. Britain and France are conducting studies on the administration of human leukocyte interferons in man. In Russia and Italy there are large groups studying the clinical application of the interferon system.

Several other inducers of interferon are being studied including modified nucleic acids and drugs that are not chemically similar to nucleic acids. Research on the interferon system seems to be leading to successful treatment of viral diseases and tumors for which there has been no treatment previously available.

L.H.N.

Reference

1. Harris, M., Interferon: Clinical Application of Molecular Biology, Science 170, 1068, December 4, 1970.

A New Approach To Viral Chemotherapy

The production of interferon is one characteristic of the host response to infection with an intracellular parasite. It has, however, not yet fulfilled its promise as a practical antiviral substance and in almost all experiments reported up to now, interferon treatment has required the initiation of therapy prior to, simultaneously with, or immediately after inoculation of the virus. Perhaps if there were circulating interferon this could be one factor in the control of viral replication in the infected host. Phagocytic cells of the reticuloendothelial system and peripheral leukocytes may be sources of the interferon in the system.

We know, for example, that interferon production by macrophages may protect a population of susceptible cells from viral infection in vitro. Furthermore, when macrophages have been infected with a nonreplicating virus in vitro, then transferring them to mice lead to detectable interferon in their circulation. This observation suggested to Glasgow a way of testing the control of viral infection by transferring to infected mice interferon producing macrophages.

Macrophages were harvested from donor mice. 5 to 7 days afterwards they were exposed to chikungunya virus (CV) in vitro for 1 hour, washed to remove unadsorbed virus, divided into equal portions, and inoculated into recipient animals which had been infected with Semliki Forest virus (SFV). This is an arbovirus which produces a systemic infection with encephalitis and death in susceptible mice. The time the infected mice received the virus macrophages was $\frac{1}{4}$ to $\frac{1}{2}$ hour and 2-7 days after inoculation. In the control group practically all died whereas of the treated group 16 out of 24 survived.

To extend the application of their therapeutic approach to other viral infections, the efficacy of transferring interferon-producing cells was determined in animals infected with encephalomyocarditis virus (EMC) which is a murine enterovirus. The treatment procedures were identical with those described for the experiment with SFV. The mice were inoculated with EMC virus intraperitoneally with a dose calculated to initiate a lethal infection in 90-100 percent of inoculated animals in the controls. However, the group of animals receiving interferon producing macrophages again showed a lower final mortality, only 10 out of 24.



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References: 1. Batterman, R. C., and Grossman, A. J.: *Fed. Proc.* 14:316, 1955. 2. Goodman, L. S., and Gilman, A., ed.: *The Pharmacological Basis of Therapeutics*, ed. 4, New York, The Macmillan Company, 1970. 3. Vickers, F. N.: *Gastroint. Endosc.* 14:94, 1967. 4. Mielke, C. H., Jr., and Britten, A. F. H.: *New Engl. J. Med.* 282:1270, 1970 (Corresp.). 5. Kestler, O. C., and Gyurik, J.: *Industr. Med. Surg.* 21:372, 1962. 6. Forster, S., et al.: *Amer. J. Orthop.* 2:285, 1960. 7. Data on file, McNeil Laboratories, Inc. 8. Friend, D. G.: *Clin. Pharmacol. Ther.* 5:871, 1964.

*U.S. PATENT NO. 2,895,677

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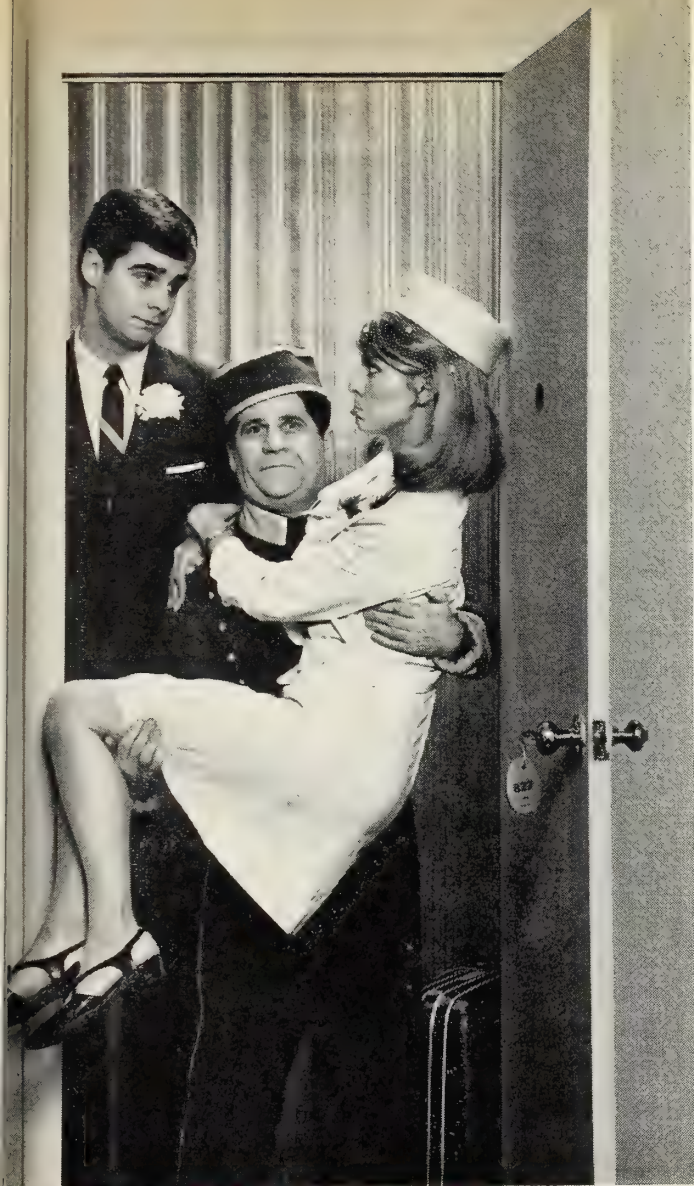
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*U.S. PATENT NO. 2,895,877

The foregoing certainly suggests the interpretation that the course of viral infections may be ameliorated by inoculating infected animals with interferon producing macrophages. One of the limitations of the use of interferon as an antiviral substance has been the necessity of initiating treatment early during the incubation phase of a viral infection. It is apparent that any form of therapy which is effective only when utilized prior to onset of disease has a limited potential. In the experiment with EMC virus however, the treatment was delayed until the animals had already developed symptoms of infection.

The pathogenesis of EMC virus infection in mice is characterized by a viremia within 24 hours of infection with seeding of target organs and the central nervous system by 24-48 hours. The amount of virus in the brain reached a maximum by 72 to 120 hours. The development of ruffled fur, hunched posture, and paralysis may be correlated with involvement of target organs and was observed at days 4-5 after infection. The treatment of interferon producing macrophages was delayed until day 5 of infection when maximum titers of virus were already present in brain and all animals were either paralyzed or had evidence of ruffled fur and hunched posture. Treatment consisted of daily intraperitoneal inoculations of interferon-producing macrophages for 5 consecutive days. The combined results were 10 survivors out of 26 animals in the macrophage group and only 2 in the control group.

These results demonstrate that the outcome of viral infections may be altered after involvement of target organs and onset of clinical symptoms. The efficacy of the technique transferring virus-infected macrophages may be a function of interferon production by these cells in the recipient animals. It may be due to the capacity of those cells themselves to reach the site of an inflammatory reaction. Finally, it may be a result of the delivery of an interferon-inducer to other host cells. As yet, Glasgow is not certain as to which of these mechanisms operate.

The recovery of recipient animals from an established viral infection suggests that transfer of interferon-producing white blood cells may offer another approach to the therapy of viral infections.

L.H.N.

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Vitamin A In Clinical Medicine

One of the first recognized symptoms of vitamin A deficiency was that of night blindness, and its nutritional cure, ox liver or the liver of black cocks has been known for 3,500 years as written in Eber's papyrus.¹ In 1956 this method was still in use in Ruanda to treat young boys for night blindness and Bitot's spots. It was at Yale that Osborne and Mendel realized that a fat-soluble factor "A" was essential for growth, survival, and the prevention of xerophthalmia in rats. Early feeding experiments also indicated that vitamin A was associated with vegetables containing yellow pigments, the carotenes. These carotenes are related structurally to vitamin A and are converted to A in the liver. There followed clarification of the chemical structure of "A" and its synthesis in large quantities.

Vitamin A precursor beta-carotene requires some fat to be absorbed from the intestine and the vitamin itself requires protein to be absorbed. It is hydrolyzed to retinol in the lumen of the intestine, stored in the liver, after which it travels around bound to a specific transport protein. In protein deficiency vitamin A will not be mobilized from the liver. The serum levels of vitamin A range from 30-67 micrograms/100 ml. A fair proportion of the population have vitamin A levels below 20 micrograms/100 ml. varying from 3.8 per cent of people over 60 to 33 per cent of infants between birth and age 5.

The function of vitamin A in the visual cycle was clarified by George Wald of Harvard for which he received the Nobel award in 1967. The human retina contains 2 distinct photoreceptor systems: rods especially sensitive to light of low intensity and cones respond to high light intensity and colors. The major difference between the visual pigment in rods (rhodopsin) and cones (iodopsin) is due to the nature of the protein bound to retinal. All the reactions involved in the oxidation of retinol to retinal by light are known in detail.

Outside the visual cycle we still do not understand the metabolic role of vitamin A despite the fact that vitamin A deficiency is a serious disease and may be fatal particularly in infants and young children who are suffering from kwashiorkor or marasmus. Without ocular manifestations in these diseases the mortality is about 15 per cent. In contrast, 64 per cent of such patients with vitamin A deficiency and cor-

neal lesions die in spite of intensive vitamin A therapy as well as treatment for the two diseases.² Studies are presently underway to determine the role of vitamin A on the function of cell membranes.

The average American diet³ provides about one half of its vitamin A activity as carotene and the other half as performed vitamin A. The recommended daily allowances for vitamin A in international units are as follows: adults, 5,000; pregnant women 6,000, women in lactation 8,000; infants 1,500, gradually rising to 5,000 at ages 12-20. Obviously, the requirement for vitamin A becomes considerably greater than the recommended daily allowance in patients with diseases in which the absorption, storage or mobilization of vitamin A is impaired or in which the excretion of this vitamin is greatly increased.³

Deficiency of vitamin A was estimated by Ooman, et al in 1963⁴ around the world and were found to be a very serious problem in many Asian countries, especially Syria, Jordan and Iraq, Haiti and Brazil. It causes untold misery for parents who see their children die and life-long disability with partial or complete blindness for those who survive. Clinical deficiencies are night blindness, drying of the conjunctiva, then later drying of the cornea, which becomes distorted, softens and finally there is perforation of cornea and iris prolapse. Keratomalacia particularly in infants and children is a very acute process and may occur without there being time for the more chronic changes of xerosis to occur. The severity of the lesions is greatest in early life. In adults and schoolage children it is rare to find more than night blindness and irritating dryness of the eyes.

Frequently vitamin A deficiency is also associated with protein malnutrition. In this case protein will not alone cure kwashiorkor or marasmus but vitamin A also must be added. There have been epidemic outbreaks of vitamin A deficiency coinciding with the distribution of skim milk by UNICEF in Brazil. This was attributable to the fact that the vitamin A capsules which were also distributed with the milk did not reach the children. Some of the reasons discovered were: the children didn't like them, the parents took the capsule and gave the children the milk, or parents sold the capsules. Such experiences stress the enormous importance of supplementing skim milk with vitamin A because increased

protein intake causes increased vitamin A requirement. It was not until the fall of 1968 that non-fat dry milk used in the food donation programs in the U.S. was fortified with vitamin A.

Vitamin A is excreted in the urine in pneumonia to the extent of 1,000 mg/day. Thus a person whose vitamin A stores is marginal may quickly lose his reserves. Many other diseases act similarly such as chronic infections like tuberculosis and cancer. In addition to losing vitamin A excessively there develops a high incidence of respiratory infection, gastroenteritis and other infectious diseases among children suffering from xerophthalmia. This frequency of infectious disease in malnutrition could both cause loss of vitamin A and also result from this deficiency.

Attention should also be given to vitamin A status in patients with diseases in which fat absorption is defective. Serum A levels are depressed in patients with celiac disease, sprue, obstructive jaundice, cystic fibrosis and ingiardiasis. In general serum A levels decrease in pyrexia, especially noticed in children with rheumatic fever and infectious hepatitis. Cirrhosis of the liver usually results in extremely low and sometimes completely absent reserves of vitamin A in the liver.

During the last 50 years the two remarkable achievements in the field of vitamin A research have been the synthesis of the vitamin and elucidation of its function in the visual system. Clinical studies have established a relationship between vitamin A deficiency and protein malnutrition. It is not well recognized that vitamin A deficiencies is associated with a poor prognosis and that it greatly increases the mortality in children suffering from malnutrition.

Despite the extremely low price of the vitamin, 5 cents for one human being's annual requirement, the problem of vitamin A deficiency along with protein malnutrition is one of the two most serious nutritional deficiency diseases in the world today.

L.H.N.

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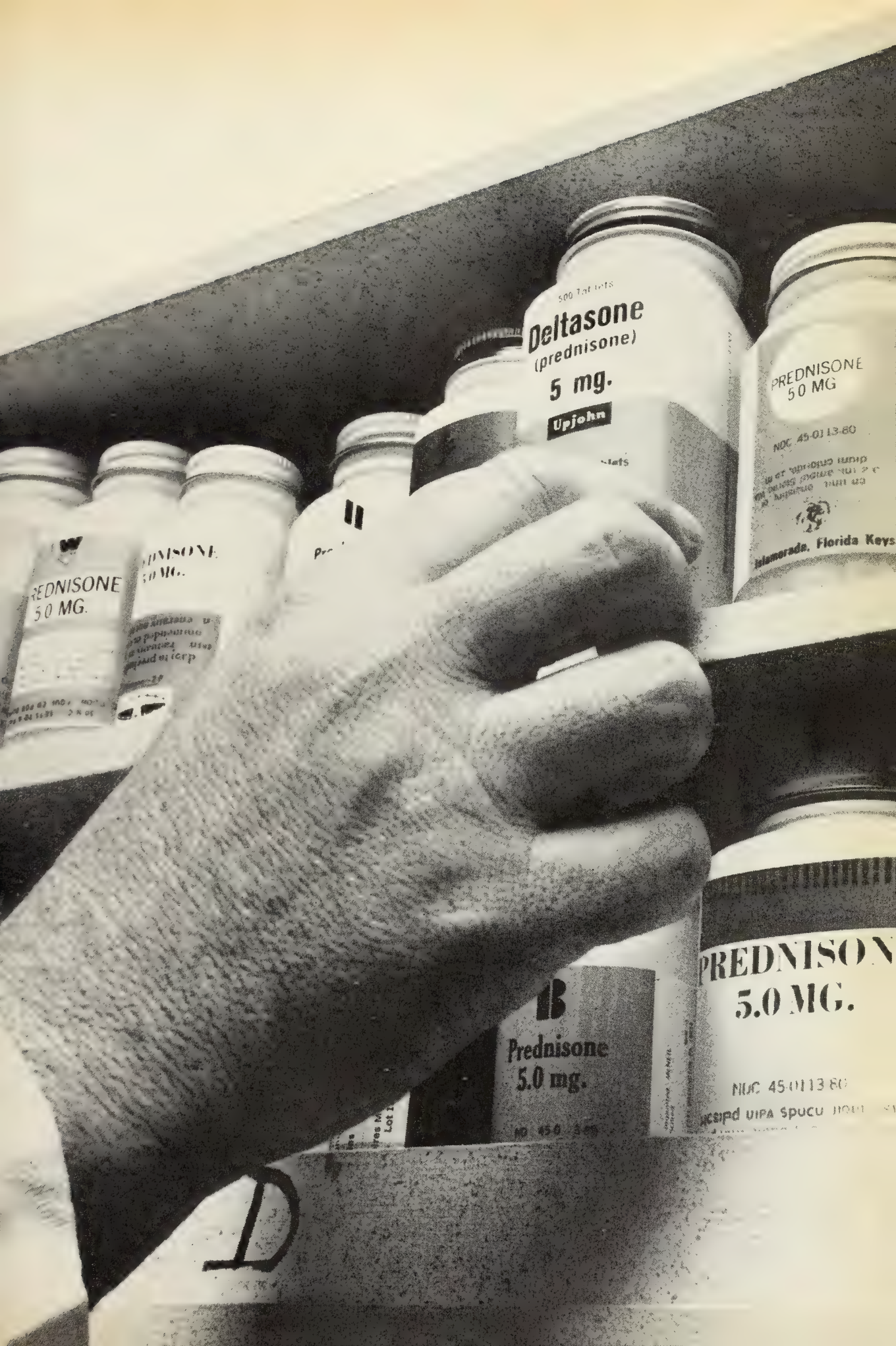
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Contraindications: As for all other corticoids. *Considered Absolute*—herpes simplex keratitis, acute psychoses and latent, healed or active tuberculosis. May be lifesaving in certain cases of pulmonary or meningeal tuberculosis, but should be used only in conjunction with adequate and effective antituberculous therapy to which causative organisms are shown to be sensitive. *Considered Relative*—active or latent peptic ulcer, Cushing's syndrome, diverticulitis, fresh intestinal anastomoses, osteoporosis, renal insufficiency, thromboembolic tendencies, psychotic tendencies, diabetes mellitus, hypertension, local or systemic infections including vaccinia, varicella and other exanthematous diseases, and fungal infections, and, pregnancy particularly during the first trimester because of observation of fetal anomalies in experimental animals. If necessary to give corticosteroids during pregnancy, watch newborn infants closely for signs of hypoadrenalism and institute appropriate therapy if signs appear.

If corticoids are used in the above conditions, weigh risks against benefits.

Precautions: Deltasone should be given only with full knowledge of characteristic activity of and varied responses to corticoids. Because of inhibiting effect on fibroplasia, corticoids may mask signs of and enhance spread of infection; hence, watch patients closely, and if intercurrent infection occurs, control with appropriate antibacterial measures. If possible, avoid abrupt cessation of corticosteroid therapy because of the danger of superimposing adrenocortical insufficiency on the infectious process. Prolonged hormone therapy usually causes a reduction in the activity and size of the adrenal cortex. When discontinuing therapy, relative adrenocortical insufficiency may be avoided by gradual reduction of dose. However, a potentially critical degree of insufficiency may persist asymptotically for some time even after gradual discontinuation of adrenocortical steroids. Therefore, if a patient is subjected to significant stress, such as surgery, trauma, or severe illness while being treated, or within one year (occasionally up to two years) after treatment has been terminated, hormone therapy should be augmented or reinstituted and continued for the duration of the stress and immediately following it. Since mineralocorticoid secretion may be impaired, salt and/or desoxycorticosterone should be administered conjunctively. It is preferable to use a soluble hormone preparation in the immediate preoperative and postoperative periods.

Although unlikely with Deltasone, average and large doses of corticosteroids can cause elevation of blood pressure, salt and water retention and increased potassium and calcium excretion. Dietary salt restriction and potassium supplementation may be necessary. Glucocorticoid steroids may aggravate diabetes mellitus so that higher insulin dosage may become necessary or manifestations of latent diabetes mellitus may be precipitated. Corticosteroids may aggravate myasthenic symptoms in myasthenia gravis and should be given with proper precautions.

Muscle weakness, in some instances, attributed to hypopotassemia, has been reported following prolonged systemically administered corticoids. Excessive potassium loss, like excessive sodium retention, is not likely to be induced with effective maintenance

doses of Deltasone (prednisone), however, keep this effect in mind and perform periodic serum potassium determinations in patients on prolonged corticoid therapy. Muscle weakness occurring with normal serum potassium levels may be due to disturbance in muscle metabolism. Severe myopathy is associated with substantial doses of steroids for prolonged periods, and evidence indicates it occurs more frequently with 9-alpha-fluoro steroids. Replacement with non-fluorinated steroid has, in some instances, resulted in improvement.

Retardation of linear growth, roughly proportional to dose, has been noted in children on corticoids for six months or more. Following cessation of therapy, growth rate may be accelerated. Therefore, carefully observe growth of children on prolonged corticoids and if growth is retarded, reduce dose sufficiently to permit recovery before epiphyseal closure. Make every effort to avoid corticoids during pregnancy, since spontaneous remission of some diseases such as rheumatoid arthritis may occur. Long term corticoid therapy may evoke hyperacidity or peptic ulcer, therefore, as prophylaxis, an ulcer regimen and antacid are highly recommended. Take X-rays in peptic ulcer patients complaining of gastric distress, and, whether or not changes are noted, an ulcer regimen is recommended. Since prednisone causes less salt and water retention than many other glucocorticoids, patients should be observed closely for development of undesirable hormonal effects that are less obvious indications of steroid toxicity than edema and hypertension due to salt and water retention. Continued supervision of patients after cessation of therapy is essential, since there may be a sudden reappearance of severe disease manifestation.

Adverse Reactions: Adverse reactions associated with use of corticoids include: Cushing's syndrome, moon facies, supraclavicular fat pads, hirsutism, striae and acne; relative adrenocortical insufficiency particularly in time of stress due to trauma, surgery or severe illness; protein catabolism with negative nitrogen balance; electrolyte imbalance; alteration of glucose metabolism with aggravation of diabetes mellitus including hyperglycemia and glycosuria; osteoporosis reversible only with difficulty; spontaneous fractures; aseptic necrosis of the hip and humerus; activation and complication of peptic ulcer including perforation and hemorrhage; aggravation or masking of infection; increased blood pressure; convulsions; petechiae and purpura; menstrual irregularities including amenorrhea, spotting or prolonged bleeding; insomnia; psychic disturbances especially abnormal euphoria; nervousness; posterior subcapsular cataracts occasionally requiring extraction; increased intraocular tension; increased intracranial pressure with papilledema (pseudotumor cerebri); pancreatitis; necrotizing angitis; thinning of scalp hair; suppression of growth in children; thromboembolic complications; facial erythema; allergic skin reactions; ulcerative esophagitis; sweating; vertigo; weakness; myopathy; headache; exophthalmos. Adverse reactions are usually reversible and usually disappear when drug is discontinued.

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The Molecular Bases Of Taste And Its Disorders

Some cancer victims experience changes in food tastes similar to those experienced by pregnant women. A sudden aversion to what may have been a favorite food suddenly appears in some cancer patients long before the disease becomes apparent, Dr. Thurston B. Brewin, a Scottish radiotherapist reported at the 10th International Cancer Congress in Houston, Texas.

Apparently the tumor secretes a chemical which like that in the pregnant woman produces bizarre craving for particular foods and dislikes for others. The tumors may not appear for months or years after the alteration of the food taste and furthermore, the change has nothing to do with the appearance of a tumor in parts of the body related to taste or smell. Dr. Brewin interviewed 2500 patients who developed alcohol intolerance to food and 800 cancer patients who also developed food intolerance. This food intolerance seems to appear more frequently in persons with some types of cancer such as cancer of the colon, than in other types.

The patients are reluctant to talk about this and do not mention it to their physicians "because they are afraid of being laughed at". Roughly one-third of the 800 patients with cancer developed food aversion at some state and half of them had it at an early stage. Like pregnant women, tumor patients also develop cravings for certain foods, although not so frequently. The change occurs suddenly and usually involves a single food. The change of food tastes was found to involve alcohol, eggs, milk, sweet foods, cheese and fruit especially.

There is, of course, also a wide variation found in normal individuals in their desire or rejection of some foods. What the biochemical mechanism is which normally regulates taste sensitivity is now proposed as a theory by Dr. Robert I. Henkin of the National Heart and Lung Institute, Bethesda, Maryland.¹ The theory divides the taste process into two parts, preneural and neural. The preneural phase consists of the flow of the tasted substance—the "tastant" through

the pore at the center of the taste bud to the taste nerve-ending just inside. At that point the neural stage begins. The theory holds that the taste bud acts as a chemical sieve which actually keeps much of the tastant away from the taste nerves somewhat as the iris regulates flow of light to the retina.

The opening and closing of the taste bud pore and its membrane are believed to regulate the tastant's contact with the nerve ending. These movements require a "gate-keeper" protein lining the membrane whose changes in shape determine the amount of tastant that enters. The unfolding and refolding of the gate-keeper protein is controlled in turn by a dynamic balance between those metals such as copper, zinc, nickel which tend to open the taste bud pore and membrane and by thiols which tend to close the pore and membrane. Such a gate-keeper protein, however, has as yet not been identified.

The thiols which normally abound in the body induce proteins to uncoil and change their shape. The experiments at the NIH. have shown that taste sensitivity can be reduced to the vanishing point by the administration of thiol containing drugs and then fully restored by administration of copper and zinc ions. The tastant must, of course, first penetrate through the pore and its membrane to the taste nerve, register on the nerve, be transmitted, be received and integrated by the brain. The importance of the taste of the taste bud pore in this process has not hitherto been emphasized. It is obvious that taste does not occur without the normal presence of pores and membranes specially designed to admit tastants to the nerves within the taste buds.

The neural phase of taste is governed by glucocorticoids. Dr. Henkin's studies show that glucocorticoids control the velocity of inputs, conduction along the axons, as well as timing of impulse transmissions across synaptic junctions between neurons. In fact, the discovery of this role of the glucocorticoids in the nervous system may be even more important because the role seems to apply to the entire mammalian nervous system and sensory endorgans generally—not just for the organs of taste and not just in man.

L.H.N.

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Mutual Medical Dental Problems: The Control Of Caries

Dental caries is an irreversible and destructive disease with no reparative phase. It can only be treated surgically by excision of the diseased part and its replacement by a filling material or the extraction of the tooth. The importance of trying to prevent this disease is obvious. The essential feature of the decay process is bacterial fermentation of dietary carbohydrate. This produces organic acids which are capable of attacking the enamel.

Of special importance is the dental plaque, a sticky deposit which accumulates and adheres tenaciously to the surface of teeth and which is not subjected to cleansing by mastication and the activity of the oral muscles. Accordingly, areas where plaque forms are to be found between adjacent teeth, the depths of pits and fissures and sometimes around the necks of the teeth. The plaque is densely populated with microorganisms of many types and has a matrix composed largely of mucopolysaccharides of which dextrans are a notable component.

The amount of destruction of this film is influenced by the nature of the diet. Sucrose-rich diets cause rapid production of a thick deposit. Glucose and other dietary constituents do not behave similarly. Cretchley, et al,¹ have shown that shortly after a sucrose mouth rinse the dextran content of the plaque increases considerably. Bacterial plaque can rapidly breakdown mono and disaccharides into organic acids in sufficient concentration and for sufficient length of time at a plaque-enamel interface to cause dissolution of the enamel.

Such findings have given rise to new ideas on prevention of caries. Several of these are promising although they are still in the experimental stage and their true value as practical preventive procedures remain as yet unassessed. In particular, plaque inhibition enzymes and vaccines are presently receiving attention.

A proper diet has long been regarded as a preventive of caries, but it was B. E. Gustavsen who put this on a scientific basis. He showed that confining foods strictly to meal times produced as little caries as among persons not taking sucrose. This offered a sound scientific basis to support the advice to parents and others in charge of children that eating sweets, toffies, and other sucrose containing snacks between meals should be strictly banned.

There is a traditional but unsupported view that brown bread reduces caries, but that white bread does not. Certainly many patients who claim never to eat any bread other than brown bread do have a low incidence of caries, but this is likely due to their being also particular or selective about other items of their diet particularly those containing sucrose. No adequately controlled clinical studies on this subject have been done. However, the animal experiments have shown that all breads have a low cariogenicity. But whole meal, whole corn bread, induced more caries than white bread of 70-82% extraction. This, however, was due to increased amounts of Vitamin B in the whole meal.

Adjustment of the content of fluoride ion in the drinking water to the optimum concentration of 1 ppm has long been accepted by most authorities as a safe, effective, and ethical method of preventing caries. Experimental studies in areas where the drinking water contains fluoride either naturally or artificially have contributed evidence of the value of the ion and in addition, it has been shown that the effect of fluoride is not confined to children but continues into middle life. A recently published report of the British Department of Health has further confirmed previous findings. It also shows that the 1962 decision by the local authorities to discontinue fluoridation in Kilmarnock resulted in an increase in the caries experience of the children which is now approaching the prefluoridation level.

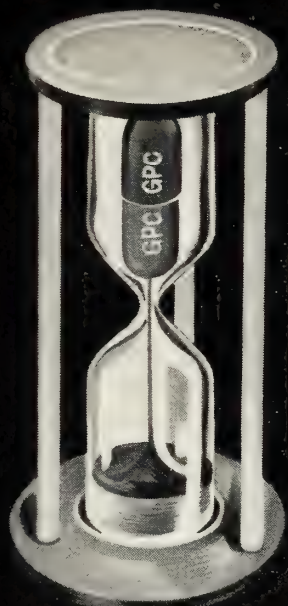
Other methods for the administration of fluoride have been considered, including salt, milk and tablets. All have drawbacks which render them generally unsuitable as part of a community health procedure. Local applications of fluoride in the form of solutions applied by means of mouth rinses and tooth pastes have been subjected to clinical trial and shown to have some value. However, the reduction in caries experience do not approach those resulting from fluoridation.

It is clear that while caries cannot be described as an entirely preventable disease, its prevalence in the community and the harm to a particular individual can be reduced considerably by sound diet and the use of fluoridated drinking water.

L.H.N.

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Progress In Genetic Research: I

There is certainly need to improve our protection against harmful use of science and technology. Nuclear energy is threatening global catastrophe. Bacteriological warfare is even a greater horror to contemplate. Other technological advances are already visibly damaging the quality of life. Who would wish scientists to tamper with man's inner nature. Exaggeration of the dangers from genetic research will inevitably contribute to an already distorted public view which increasingly blames science for our problems but ignores its contributions to our welfare. Indeed irresponsible hyperbole on the genetic issue has already influenced the funding of research. It is time to spell out what genetics can do in the foreseeable future and what it can't do.

To understand the prospects of modifying genes in a human being two principles need to be taken into account. One is that some traits are due to single genes (monogenic) and have all-or-none control over a single trait such as eye color or a hereditary disease such as hemophilia. Most traits, however, are polygenic, that is they depend on multiple genes. The most interesting human traits relating to intelligence, temperament, and physical structure are poly-

genic. There are hundreds of thousands of such gene combinations compared with the few hundred known monogenic traits. The study of polygenic inheritance is still primitive and the difference from monogenic inheritance has received little public attention. But it is this fact they must recognize if we are to distinguish between realistic and wild projections for future developments in genetic intervention in man.

Polygenic inheritance is difficult to study and understand. There are many interacting genes. They contribute to determine a "range of potential" for a given trait in an individual while his past and present environments determine his phenotype or actual state within that range. At a molecular level the explanation is now clear. The structure of a gene determines the structure of a corresponding protein while the interaction of the gene with subtle regulatory mechanisms which respond to stimuli from the environment determine the amount of protein made. Hence, the ancient formulation of the question of heredity vs environment (nature vs nurture) in qualitative terms has presented a false dichotomy which has led only to sterile arguments.

Bacterial genes have been isolated and synthesized.¹ This may soon be accomplished in man also. When this occurs it would allow us to synthesize and modify human genes in the test tube. Even when that happens we have no basis for estimating how hard it would be to overcome the obstacles to applying these methods to human cells. However, to have the gene in every body cell it would have to be incorporated into the germ cell first, an extremely difficult task. Another conceivable approach might be that of directed mutagenesis, i.e. the use of agents that would bring about a specific desired alteration of the DNA such as reversal of a mutation that had made a gene defective. So far no such directive agents have been found. Furthermore, known mutagenic agents cause random mutations, the vast majority of which are harmful.

If predictable genetic alteration of germ cells should become possible it would be even more useful than somatic cure of monogenic disease, for it could allow an individual with a defective gene to generate its own progeny without condemning them to inherit that gene. Moreover, there would be a long term evolutionary advantage, since, not only the immediate product of the correction, but also subsequent generations would be free of the disease. In contrast

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to the cure of specific monogenic diseases, improvement of the highly polygenic behavioral traits would certainly require the replacement in germ cells of a large specific complement of DNA replacing those already there. This is hard to imagine and must remain in science fiction where it is easy for the writer to move from a heart transplant to a brain transplant.

Genetics has made it possible to copy by asexual reproduction. Every cell in an animal contains the same numbers of genes, be it muscle or brain, the only difference between them is that different subsets are active, the remainder are inactive. If it should become possible to reverse the regulatory mechanism responsible for this differentiation then any cell could be used to start an embryo. The individual cell could then be developed in the uterus of a foster mother or eventually in a glorified test tube. It would then be an exact genetic copy of its single parent. There would then be no theoretical limit to the set of identical individuals derivable from a single parent and successive generations of copies. In plants transfer of cuttings is such an example.

In higher animals the stability of each cell depends on the interaction of the nucleus with the surrounding cytoplasm and it is now possible to transfer a nucleus by microsurgery or cell fusion into the cytoplasm of a different kind of cell. In frogs differentiation has been completely accomplished in this way. When the nucleus of an egg cell is replaced by the nucleus from an intestinal cell, embryonic development of the hybrid cell can produce a genetic replica of the donor of the nucleus. This result will probably also be accomplished and perhaps quite soon with cells from mammals. Such a goal could be of great value since the copying of champion livestock could substantially increase food production.

Another type of cloning can already be accomplished in mammals by separating cells of an early mouse embryo to start a new one. This can produce identical twins but they would be copies of an individual with unknown genetic structure, rather than of an adult. Such a procedure is certainly not tempting in man.

No one has yet succeeded in directly controlling sex by separating XX and XY sperm cells but this is a technical problem and might be solved. One could of course achieve the same result by aborting embryos of undesired sex which can be diagnosed by amniocentesis and examin-

ing the cell chromosome complement found in the fluid. However, predetermination of sex might cause a marked imbalance in the sex ratio in the population which could lead to dangers in our present family structure.

Any society wishing to direct the evolution of its gene pool already has available an alternative approach² selective breeding. This application of classical transmission genetics has been used empirically since Neolithic times not only in animal husbandry but also in various ways (polygamy, droit de seigneur, caste system) in certain human cultures and now through genetic choice. If we were to declare a moratorium on genetic research in order to forestall possible future control of our gene pool, it is too late. It would be like locking the barn door after the horse was stolen.

L.H.N.

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Legal Status Of Marihuana

The legal status of marihuana in our society is a subject of fierce debate.¹ However, the various scientific and medical committees that have studied the matter have come to a surprisingly unanimous conclusion: that marihuana should not be legalized for general consumption but that harsh legal penalties are unwise. Representative quotations are "There . . . appears to be good reason to moderate present punitive legislation so that penalties are more in keeping with what is known about risks; that is, they are not great."² "The possession of small amounts . . . should not normally be grounds for imprisonment . . . but only for a fine."³ "Legalization of marihuana would create a serious problem in the United States but penalties for violations of the laws . . . are often harsh and unrealistic . . . the lives of many young people are being needlessly damaged".⁴

The legal regulation of marihuana was attempted in 1937 by the Marihuana Tax Act. It permits physicians, researchers and commercial users of marihuana to register and to obtain it by paying a transfer tax of \$1 per ounce. Non-registered citizens may also possess marihuana

but the tax is prohibitive \$100 per ounce. Failure to comply with these tax provisions is punishable by \$2,000 fine and up to 5 years in prison. In 1969 the tax aspect was declared unconstitutional and legislation is now pending in Congress to prohibit possession of marihuana directly rather than by means of a tax act.

Possession is also illegal in all 50 states and is a felony in 28. There is also a tendency towards reduced penalties for first-offense possession. In the past 3 years 24 states have reduced their penalty structures—most of them substantially.⁵

There is a great need for the scientific study of legal penalties. They do have a useful deterrent effect, but they also carry a social cost,⁶ chiefly in that they may further diminish the capacity of the person to deal maturely with authority. In prison an offender can be damaged beyond recall if the aim is punishment not rehabilitation. The outcome could well be an individual who is wrecked beyond capacity to identify with constructive social goals.

Dissatisfaction with the law enforcement approach to control of drug use has given impetus to educational programs. The National Institute of Mental Health sponsors television commercials and has prepared leaflets that briefly describe adverse drug reactions. Many communities are also taking steps to inform themselves and in particular their high school and college students about contemporary drug use. The importance of providing young people with life opportunities that will serve as alternatives to drug use is becoming increasingly recognized.

Complicated regulations must be complied with in order to obtain marihuana for research purposes. Some form of control is required to protect both the researcher and subjects. But these should not be so burdensome as to discourage or delay needed research. Any preconceived notion about drugs can only delay the knowledge which is so essential to overcome the drug problem.

Drugs are making dramatic changes in our psychologic environment. Education, research, treatment and law enforcement programs all have a place in helping us to deal as rationally as possible with these changes. As physicians we must be ready to deal wisely with the casualties of youthful pharmacologic experimentation.

L.H.N.

References

1. Pillard, R. C., Marihuana, *New Eng. J. Med.* 283: 294 Aug. 6, 1970.
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5. Mathias, C. M.: Analysis of state laws concerning marihuana. *Congressional Record* 116:S240-S245, No 2, 1970.
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New York Children Lack Vitamin A

(*Nature* 228, 309 Oct. 24, 1970.) There is a widespread deficiency of Vitamin A among children in New York City, particularly those from lower income homes. According to Dr. Robert Newman of the National Nutritional survey of New York City.

The study released in October was based on laboratory analysis and was not related to clinical examinations. Vitamin A contributes to a loss of vision in poor light but it is not known how great the deficiency must be before sight is affected.

There is also great disagreement as to what constitutes the "minimal daily requirements" of nutrients. This is true for Vitamin C which in Britain 30 mg daily is considered adequate, while in this country 70 mg is so considered.

Forty-six per cent of children under age seven in lower income families were found to have Vitamin A deficiency compared to 18 per cent of children of that age in upper income families.

Between ages of 7 and 12 figures were 27 and 25 respectively. Ten per cent of the low income children between 7-12 were deficient in Vitamin B, riboflavin, compared to six per cent in the upper income children. The dividing line between lower and upper income families was placed at an annual income of \$4,156 for a family of four.—L.H.N.

FROM THE EXECUTIVE DIRECTOR'S OFFICE

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CALL ANNUAL MEETING OF THE HOUSE OF DELEGATES

The 1971 Annual Meeting of the House of Delegates is scheduled to be held in the Terrace Room of the Harford Hilton Hotel, Hartford, on Tuesday, April 27. Commencing at 8:30 A.M. Following luncheon, the House will reconvene for the completion of its business.

Morris A. Granoff, President
Kenneth F. Brandon, Speaker of the House
Reginald C. Edson, Secretary

INTRODUCTION OF RESOLUTIONS

Article V, Section 12, Par. 3 of the Bylaws of the Society Provides that:

All resolutions to be considered as regular business at any regular meeting of the House of Delegates must be in the hands of the Speaker not later than seventy-two hours before the opening of that meeting. All resolutions and recommendations published in the official agenda distributed to the members of the House prior to the meeting at which action is to be taken shall be considered as regular business. Resolutions presented later than seventy-two hours before the opening of a meeting will be referred for consideration as regular business by the House only when they are presented by the Council or accepted for consideration by majority vote of the delegates present. Any resolution which does not qualify in accordance with the aforesaid provisions for consideration as regular business may be accepted for action by a majority vote of the delegates present and, if so accepted, shall be referred at once by the Speaker to a reference committee. Any such reference committee shall consider resolutions referred to it and shall report, with recommendations to the House before adjournment of the meeting.

PROPOSED AMENDMENTS TO THE BYLAWS

The following proposed amendment to the Bylaws was presented to the House of Delegates on November 19, 1970 and was tabled for consideration and action at the next regular meeting of the House of Delegates.

In accordance with the Bylaws, this amendment will be published in Connecticut Medicine "on one or more occasions prior to the next meeting . . . at which meeting the amendment shall be taken off the table and acted upon by the House of Delegates."

Introduced by the Council

I. HOUSE OF DELEGATES

Purpose: To allow the Speaker, or, in his absence, the Vice-Speaker, to arrange the order of business for meetings of the House of Delegates in such manner as to expedite the business of the House by taking into account the amount and nature of the business to come before the meetings.

Article V—House of Delegates

Section 12. Procedure.

(Delete underlined words and add words in capitals)

Par. 1. Order or Business. (The following shall be the general order of business at all sessions of the House of Delegates:) **THE SPEAKER, OR IN HIS ABSENCE, THE VICE-SPEAKER, SHALL SET THE ORDER OF BUSINESS FOR EACH MEETING OF THE HOUSE OF DELEGATES AND SHALL HAVE PUBLISHED IN THE AGENDA FOR THAT MEETING THE ORDER**

OF BUSINESS TO BE FOLLOWED. THE GENERAL CATEGORIES OF BUSINESS TO COME BEFORE THE HOUSE AT ALL REGULAR MEETINGS SHALL INCLUDE THE FOLLOWING:

Call to Order by the Speaker
Roll Call
Report of Reference Committee on Credentials
Speaker's Remarks and Appointment of Reference Committees
Reading and Adoption of the Minutes of the
— Previous Meeting
Introduction of Guests
Reports of Officers
Reports of Committees
Presentation of Awards
Old Business
New Business, and Reports of Reference Committees
Adjournment

At any meeting, (the House,) by majority vote, THE HOUSE may change the order of business.

SUMMARY OF ACTIONS

COUNCIL MEETING

Wednesday, December 16, 1970

I. ATTENDANCE

Present in addition to the Chairman, Dr. S. J. Martin, and the Vice-Chairman, Dr. K. F. Brandon, were: Drs. Granoff, Weber, Jr., Grendon, Burnham, Edson, Abbot, Dean, Gardner, Fabro, Rem, Cramer, Ragland, Jr., Harwood, Pelz, Wilson, Jr., Roch, Nemoitin, Van Syckle, Friedberg, Harkins, LaBella, Freedman, Root, Jr., vonGlahn, Hess and Bradley.

Also present were: Mrs. Lindquist, Mr. Tomat, Mr. Sullivan, Mr. Donelan (AMA), Mr. Olson (FCMA) and Dr. Richards.

Absent were: Drs. Palomba, Johnson, Purnell and Klare.

II. INTRODUCTIONS

Prior to starting the business meeting, the Chairman introduced the following new members of the Council:

Orvan W. Hess, New Haven—Alternate AMA Delegate
E. Tremain Bradley, Norwalk—Alternate AMA Delegate
Sidney L. Cramer, Hartford—Alternate AMA Delegate (Dr. Cramer is also Councilor from HCMA)

Robert W. Harkins, Woodbury—Associate Councilor, LCMA

Louis O. LaBella, Middletown—Associate Councilor, MCMA

III. ROUTINE BUSINESS

Approval of Minutes

As printed and distributed, it was VOTED to approve the minutes of the meeting of October 29, 1970, with note to be made that Dr. Fabro questioned whether (as recorded) CRMP actually has "the legal aspects of confidentiality (in the CUPISS Program) . . . under study by attorneys engaged by CUPISS".

Life Memberships

It was VOTED to approve applications for Life Membership submitted by the following Active Members:

Dwight J. Bernstein, 1 Ten Acre Road, New Britain (HCMA)—1971

Joseph F. Burke, 1389 West Main Street, Waterbury (NHCMA)—1971

Stephen P. Coates, 370 North Main Street, Suffield (HCMA)—1971

Lawrence P. Cogswell, 85 Jefferson Street, Hartford (HCMA)—1971

Charles S. Culotta, 2714 Whitney Avenue, Hamden (NHCMA)—1971

Frank H. D'Andrea, 750 Summer Street, Stamford (FCMA)—1971

Thomas W. Dudas, 130 Main Street, Southington (HCMA)—1971

Arthur J. Geiger, Amity Road, Woodbridge (NHCMA)—1971

Howard W. Gourlie, 75 North Main Street, Enfield (HCMA)—1971

John G. Martin, 1064 Farmington Avenue, West Hartford (HCMA)—1971

Charles T. Meacham, 1911 Summer Street, Stamford (FCMA)—1971

Joseph Platz, 527 Burnside Avenue, East Hartford (HCMA)—1971

Siegfried S. Schatten, 1157 New Britain Avenue, Elwood (HCMA)—1971

William M. Shepard, RD#2, Putnam (WCMA)—1971

Joseph J. Smith, 800 Stratfield Road, Bridgeport (FCMA)—1971

Date of Next Meeting

The next meeting of the Council was scheduled for Thursday, January 21, 1971.

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Robitussin® Line

The coughing season is here again. Time to rely on the four Robitussins and Cough Calmers to help clear the lower respiratory tract. All contain glyceryl guaiacolate, the efficient expectorant that works systemically to help increase the output of lower respiratory tract fluid. The enhanced flow of less viscid secretions soothes the tracheobronchial mucosa, promotes ciliary action, and makes thick, inspissated mucus less viscid and easier to raise. Available on your prescription or recommendation.

For coughs of colds and "flu"

Robitussin®

Each 5 cc. contains:

Glyceryl guaiacolate 100.0 mg.
Alcohol, 3.5%

For unproductive allergic coughs

Robitussin A-C®

Each 5 cc. contains:

Glyceryl guaiacolate 100.0 mg.
Pheniramine maleate 7.5 mg.
Codeine phosphate 10.0 mg.
(warning: may be habit forming)
Alcohol, 3.5%

Non-narcotic for 6-8 hr. cough control

Robitussin-DM®

Each 5 cc. contains:

Glyceryl guaiacolate 100.0 mg.
Dextromethorphan
hydrobromide 15.0 mg.
Alcohol, 1.4%

Clears sinuses and nasal stuffiness as it relieves cough

Robitussin-PE®

Each 5 cc. contains:

Glyceryl guaiacolate 100.0 mg.
Phenylephrine hydrochloride 10.0 mg.
Alcohol, 1.4%

Robitussin-DM in solid form for "coughs on the go"

Cough Calmers™

Each Cough Calmer contains:

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Select the Robitussin® "Clear-Tract" Formulation That Treats
Your Patient's Individual Coughing Needs:

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All 5 Robitussins have an EXPECTORANT-DEMULCENT action. Keep this handy chart as a guide in selecting the formula that provides the extra benefits you want for your patient.

	Cough Suppressant	Antihistamine	Long-Acting (6-8 hours)	Nasal, Sinus Decongestant	Non-Narcotic
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ROBITUSSIN A-C®					
ROBITUSSIN-DM®					
ROBITUSSIN-PE®					
COUGH CALMERS™					

A. H. Robins Company, Richmond, Va. 23220

A-H-ROBINS

IV. OLD, NEW AND SPECIAL BUSINESS

Election of Student Members

It was VOTED to elect to Student Membership 10 Connecticut residents who are enrolled in medical schools in the United States. A list of the names of those elected will be published in an early issue of the Journal.

Resignations, Appointments, Etc.

- (a) *Representative to Connecticut Health League:* It was VOTED to accept the resignation of John J. Scanlon, Norwalk, as a representative to the CHL.
- (b) *Committee on National Legislation:* It was VOTED to accept the resignation of Herbert A. Kaufmann, Middletown, as a member of this Committee.
- (c) *Committee on Public Relations:* To fill a vacancy on the Committee caused by death of Ivor Smyth, Willimantic, it was VOTED to appoint Melvin J. Sandler, Willimantic, to replace Dr. Smyth on the Committee for the balance of the current year (1970-71).
- (d) *Committee on Postgraduate Education:* It was VOTED to accept the resignation of Frank F. Northman, Bridgeport, as a member of this Committee. It was further VOTED to appoint John L. Sullivan, Bridgeport, to replace Dr. Northman on the Committee for the balance of the current year (1970-71).
- (e) *Committee on Drug Abuse Education:* On recommendation of the Committee chairman, Jacob deJong, Newtown, it was VOTED to appoint to membership on the Committee the following: Jacob deJong, Newtown, Chairman; Malcolm B. Bowers, Jr., New Haven; Samuel Climo, New Haven; John Donnelly, Hartford; John E. Donnelly, Bethany; B. R. Force, Groton; E. P. Gallo, Winsted; Charles E. Jacobson, Jr., Manchester; W. Kawecki, New Britain; Charles W. McGuire, New Haven; Frank F. Northman, Bridgeport; Kurt S. Pelz, Wallingford; Donald L. Pet, Hartford; Edward J. Platz, Glastonbury; Boris G. Rifkin, New Haven; Brigid I. Russell, Meriden; Daniel Sayers, Waterbury; Francis A. P. Williams, Bridgeport.
- (f) *CSMS Designate on CRMP Advisory Board:* Having been apprised of the decision of Frank K. Abbot, Waterbury, to resign as a CSMS designate on the Advisory Board of CRMP and as a member of the CRMP Research and Evaluation Committee, the Council VOTED to seek to prevail on Dr. Abbot to reverse his

decision and agree to retain both posts. This effort failed, and, in anticipation of receiving from CRMP a request to nominate a replacement for Dr. Abbot on the CRMP Advisory Board, the Council further VOTED to nominate Morris A. Granoff, New Haven, in compliance with such request when received. Dr. Abbot's term on the Advisory Board is from 1-1-70 to 12-31-73.

Formation of Council's "Fiscal Committee"

It was VOTED to approve a proposal that the Council form a Fiscal Committee to advise the Council on all fiscal matters, including the expenditure of non-budgeted funds. The formation of this new Committee will combine the functions of, and abolish, the pre-existing Fiscal Advisory Committee, Committee on Building Management, Budget Committee on Investment of Funds, Committee on Loan Fund and the Committee on Employees Pension Plan. Later in the meeting, it was VOTED to appoint the Fiscal Committee as follows:

Composition	For 1970-71
The Treasurer, Chairman	Bernard A. Burnham
At least four (4) members of the Council	David A. Grendon Frank K. Abbot Michael A. Dean Carl W. Johnson Reginald C. Edson Bernard O. Nemoitin Harold vonGlahn
The President, ex-officio	Morris A. Granoff
The President-Elect, ex-officio	Frederick C. Webber, Jr.

CSMS Sponsored Bill on Abortion

It was VOTED to accept a report of the Committee on State Legislation that the draft of a subject bill, prepared by the Ad Hoc Committee to Study the Problems of Abortion, be approved, subject to the condition that the draft be found, or amended, by CSMS legislative counsel to be in accord with all stipulations imposed by the House of Delegates on November 19, 1970. In a section covering the consent of minor females, it is to be suggested to legislative counsel that the words "legal consent for medical-surgical procedure be obtained." Replace "her consent shall have documented approval of a parent or guardian."

Chiropractic

Report on AMA Conference on Quackery: It was VOTED to accept as information a report on the proceedings of this Conference (Boston, Mass., 11-29-70) which was filed by Isadore H. Friedberg, Hartford, who attended as a representative of the Society.

Employment of Legislative Agent

On recommendation of Kenneth F. Brandon, Hartford, Chairman of the Committee on Public Affairs, it was VOTED to approve the employment of State Senator Raymond C. Lyddy, Bridgeport, as the Society's legislative agent for the biennium 1971-72.

Reports—Committee on Allied Medical Services

- (a) It was VOTED to approve the proposal of the Committee to hold a second conference on nurse-physician relationships, tentatively scheduled for March 24, 1971, and it was further VOTED to approve a recommendation of the Fiscal Advisory Committee that up to \$500 be allocated as the Society's contribution to covering the costs of the conference. When known, the contributions made by other co-sponsoring agencies are to be brought to the attention of the Council as information.
- (b) It was VOTED to approve a recommendation of the Committee that the Society *not* support a legislative bill (being considered for sponsorship by the Connecticut Nurses' Association) which would amend the Medical Practice Act "to allow prepared persons to perform intravenous therapy". It is the Committee's opinion that good medical practice (through education, training, etc.) allows for allied health professionals to participate in the "team" approach to patient care without subjecting the Medical Practice Act to recurrent, piecemeal amendment.

CRMP

- (a) It was VOTED to receive as information copies of the minutes of several meetings (July 16, 1970, September 29, 1970) of the CRMP Advisory Board, furnished to the Council members by CRMP.
- (b) It was VOTED to receive with thanks an offer from Professor John D. Thompson, CUPISS Program Coordinator, to join the Council at a future meeting of discuss the "overall goals and objectives" of the "total CUPISS system". However, since the Council's primary interest is currently the "confidentiality" and "informed consent" aspects of the Program, it was decided to defer acceptance of Dr. Thompson's offer until a later time.
- (c) It was VOTED to receive as information the minutes of the November 4, 1970 meeting of the Ad Hoc Committee on CRMP Activities.
- (d) It was further VOTED to instruct the Ad Hoc Committee to give special attention to the

question as to whether CRMP, in any of its program activities, is operating illegally with respect to statutory prohibition of "interference" with established methods of providing and financing health care services in Connecticut.

- (e) It was VOTED to adopt several motions introduced by Frank K. Abbot, Chairman of the Ad Hoc Committee and CSMS-designate on the CRMP Advisory Board, as follows:

"MOVED: That the Council of CSMS affirm the principle that planning for the delivery of health care is the vital province of those physicians who practice medicine and that, in this, they have no peers; that practicing physicians should play a directing and controlling role in such planning, and that this function cannot be fulfilled by hospitals, other institutions, agencies or similar "systems oriented" bureaucracies; and, finally, that organized medicine can no longer let this responsibility be taken over by these special interest, counter-productive groups by default."

"MOVED: That the President appoint *immediately* an *ad hoc* Committee on *Statewide Medical Planning*, with himself as chairman ex-officio, the membership of such Committee to include the CSMS representatives on the CRMP Advisory Board and such others as the Council wishes; and it is further

"MOVED: That this Committee will be charged to study the present status of medical care and all related matters as well as to plan programs to satisfy any present and future medical needs in Connecticut; and it is further

"MOVED: That, after organizing and orienting itself, the Committee seek liaison with CRMP, with the purpose of redirecting CRMP Grand Strategy toward more relevant and practical ends and to make use of CRMP's and Comprehensive Health Planning's personnel and funds in the work and programs of the Committee; and it is further

"MOVED: That this Committee report in writing at each Council meeting."

- (f) It was VOTED to receive as information a letter from Harold Margulies, M.D., Acting Director, Regional Medical Program Service,

which was in response to his receipt of a Council-approved resolution which stated that, in the Council's view, CRMP activities tending to bring about a restructuring of the health care system in Connecticut were contrary to the intent of Congress and possibly in violation of provisions of the RMP enabling legislation. Dr. Margulies made reference to P.L. 91-515 as superseding P.L. 89-239 and implied that the newer statute gives RMP's considerably more latitude as to the scope of their activities than they had formerly. It was further VOTED to refer this letter to the new ad hoc committee to be formed in accordance with (e) preceding. The staff will seek to obtain copies of P.L. 91-515 for future reference.

Report of Judicial Committee

It was VOTED to approve the recommendation of the Judicial Committee that the Society *not* seek to establish a "statewide disciplinary board" at this time. A statutory disciplinary board of this type has been operational in the State of Washington for some ten years, and has authority to discipline all medical practitioners, including authority to suspend and revoke licensure. The Judicial Committee feels that its own potential in this area, plus the powers vested in the Connecticut Medical Examining Board, should suffice.

Report—Ad Hoc Committee on Peer Review Planning

It was VOTED to accept a subject report filed by the Ad Hoc Committee as amended to include the Litchfield County Medical Association in the list of component Associations having an organized peer review mechanism in operation. It was further VOTED to approve recommendations contained in the report as follows:

- (1) That the initiation of joint meetings with representatives of other health services providers and third party payers be deferred until the Society has developed to a reasonable degree a "structured peer review organization" within its own jurisdiction.
- (2) That, pursuant to the first recommendation, a CSMS "steering committee" on structured peer review organization be appointed by the Council (Chairman to appoint), such steering committee to be charged with developing a structured PRO for Connecticut, utilizing to the fullest extent possible the effective peer review mechanisms now being operated by four County Associations, and stimulating the development of such formal mechanisms among the other County Associations, either individ-

ually, jointly or in conjunction with one of the large Associations. It is suggested that, at least in part, the current membership of the Coordinating Committee for Usual and Customary Charge Programs be the source for members of the "steering committee", that Committee having already made substantive explorations into PRO subject matter and concepts.

- (3) That the Ad Hoc Committee be authorized to plan and hold a conference or workshop for County Association representatives (tentatively scheduled for early February) at which the importance of the Society setting up a structured PRO would be stressed, the required "facts and figures" of operating a PRO presented, and an effort made (with followup) to get a commitment from all eight component Associations to work cooperatively and in formal concert with the CSMS steering committee to accomplish the desired end. A one-day, two session meeting is contemplated, with either luncheon or dinner being served between sessions, with a participating audience of 30-40. The Ad Hoc Committee recommends further that an allocation of up to \$500. be made to the Ad Hoc Committee to cover the costs of planning and implementing this proposal.

It was further VOTED to approve a recommendation of the Fiscal Advisory Committee to allocate up to \$500 to cover the costs of the meeting described under (3) preceding.

Report—Committee on Mental Health

It was VOTED to approve a report submitted by the Committee on Mental Health "with respect to the practice of psychotherapy by a psychologist" and to approve a policy statement contained therein as follows:

"The Connecticut State Medical Society recognizes that the Connecticut Legislature, in Public Act 597, authorized the independent practice of psychotherapy by psychologists with qualifications meeting the requirements of the Act. In light of this legislative action, the question of the engagement of a psychologist to provide psychotherapy for welfare patients, independent of medical supervision, is a matter to be decided by the appropriate authorities in the State Welfare Department.

"The State Medical Society, however, notes that, because physical disorders may manifest themselves as psychological and psychiatric manifestations, psychiatrists attempt to rule out the presence of physical disorders before committing the patient to treat-

ment of a purely psychological nature. It is hoped that this safeguard will be provided to patients to be referred to psychologists for psychotherapy."

The source of the question considered by the Committee was Orvan W. Hess, M.D., Medical Director, State Department of Welfare. Dr. Hess will be advised of the action taken by the Council on the report of the Committee.

Report—Committee on Maternal Morbidity and Mortality

It was VOTED to accept a report of the Committee on the subject of the treatment of abortion in an office setting, and to approve a policy statement contained therein (with minor amendment) as follows:

"That, as an office procedure, the management of abortion by dilatation and curettage or vacuum suction is considered *not* acceptable. The emergency removal of placental tissue from the already dilated cervical os, when performed judiciously, is considered *not* to constitute an intrauterine surgical procedure".

Request for Endorsement—"VD Awareness Program"

It was VOTED to endorse a "Venereal Disease Program", to be conducted statewide during the month of February, 1971, by the Northeastern Regional Chapter of the American Social Health Association. Endorsement entails no financial commitment. The program is being co-sponsored by the Connecticut Pharmaceutical Association and the State Department of Health (among other co-sponsoring agencies). The purpose of the Program is to "increase the number of self-referrals to private physicians and clinics for diagnosis and treatment, and to acquaint more people with the signs, symptoms and effects of venereal diseases.

Connecticut Medical Services, Inc.

- (a) Having heard a verbal report on a 12-14-70 liaison meeting between CMS and CSMS representatives, presented by the Liaison Committee chairman, Dr. Granoff, the Council VOTED to receive the verbal report as information. Deferred for discussion at the next Council meeting was the question of what arrangement would be satisfactory to the Council with respect to the nomination of physician members of the CMS Board of Trustees; i.e., immediate vs. gradual restoration of the right to make such nominations.
- (b) It was VOTED to receive as information, and with thanks, a letter from Walter A. Schloss, Hartford, in which Dr. Schloss brought to the Society's attention certain promotional efforts being made by CMS representatives to en-

courage favor among physician groups for a statewide, fixed-fee, full-pay program. It was further VOTED to refer Dr. Schloss' letter to the Committee on Third Party Payments for study and report to the Council.

N.B.: *The foregoing is a summary of the proceedings and action of the Council on December 16, 1970. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by an interested member of the Society.*

Placement Wanted

Emergency Room—30 years of age, National Boards, wishes a temporary position in Connecticut. Presently in Practice. Available immediately. Contact: Ronald S. David, M.D., USAH, USASA FS, CHITOSE, APO San Francisco 09281.

Emergency Room—28 years of age, National Boards, wishes institutional type practice in a large or medium size community in Connecticut. Contact: Robert J. Riggen, M.D., 155 Poopoo Place, Kailua, Hawaii 96734.

General Practice—61 years of age, wishes solo, group, institutional or industrial type practice in Connecticut. Presently in practice. Would prefer a position with a pharmacy firm or as a plant physician. Contact: Erich Russow, M.D., 71-18-69 Place, Glendale, New York 11227.

General Practitioner—27 years of age, with National Boards, wishes group or associate type practice in a large community in Connecticut. Military obligation completed. Connecticut license. Available immediately.

Internal Medicine—44 years of age, Eligible, wishes industrial type practice in Connecticut. Presently in practice. Interested in a position in medical electronics, research, development, testing, etc. Available immediately. Contact: Keith Lusted, M.D., 939 Oak Street, S.E., Salem, Oregon 97301.

Obstetrics & Gynecology—28 years of age, National Boards, American Board Eligible, wishes solo, group or associate type practice in a large or medium size community in Connecticut.

Obstetrics & Gynecology—30 years of age, National Boards, American Board Eligible, wishes solo or group type practice in Connecticut. Contact: Frederick S. Feiner, M.D., 3218 Deerfield Road, Laurel, Maryland 20810.

Ophthalmology—31 years of age, National Boards, wishes solo type practice in a medium size community in Connecticut. Military obligation completed. Contact: Stephen H. Franklin, M.D., 555 E. William Street, Ann Arbor, Michigan 48108.

Ophthalmology—29 years of age, Eligible with National Boards, wishes solo, group or associate type practice in Connecticut. Military obligation completed.

Ophthalmology—30 years of age, National Boards, American Board Eligible, wishes associate, solo or group type practice in a medium, large or small size community in Connecticut. Contact: John P. Tortorella, M.D., 7 East 14 Street, New York, New York 10003.

Orthopedics—32 years of age, National Boards, American Board Eligible, wishes solo, group or associate type practice in a medium size community in Connecticut. Contact: Anthony A. Rizzo, M.D., 3341 Peter Lane, Yorktown Heights, New York 10598.

Pediatrician—29 years of age, certified with National Boards, wishes group or associate type practice in a large or medium size community in Connecticut. Available shortly. Contact: Philip H. Friedman, M.D., 287 Dickman Drive, Loring AFB, Maine 04750.

Physician—27 years of age, with National Boards, desires part-time work, weekends, evenings, or vacation coverage. Connecticut license. Available immediately.

Surgery—31 years of age, National Boards, American Board Certified, wishes group or associate type practice in a large or medium size community in Connecticut. Connecticut license. Contact: Girard A. Chapnick, M.D., 1023 B Drennan Park, Fort Campbell, Kentucky 42223.

Surgery—34 years of age, American Board Certified, wishes group or associate type practice in a medium size community in Connecticut. Available immediately. Contact: Gangadhar L. Maddiwar, M.D., 41-30, 43rd Street, Sunnyside, New York 11104.

General and Thoracic Surgery—48 years of age, Eligible, wishes solo, group or institutional type in a large or medium size community in Connecticut. Available immediately. Contact: Roger Paulin, M.D., 2115 Drummond, Suite 22, Montreal 107, Quebec-Canada.

Surgery—42 years of age, Eligible, wishes group or associate type practice in Connecticut. Wishes to practice surgery with no general practice in an association or group. Available immediately. Contact: A. Sergie, M.D., 2035 Pine Street, Phila. Pa. 19104.

General & Thoracic Surgery—32 years of age, National Boards, American Board Eligible, wishes group or institutional type practice in Connecticut. Prefer hospital with medical school affiliation and with residency training program in surgery. Contact: Joseph B. Twichell, M.D., 435 East 70th Street, New York, New York 10021.

Urology—33 years of age, National Boards, American Board Eligible, wishes solo or associate type practice in Connecticut. Contact: Albert V. Assali, M.D., 8796 Encino Avenue, San Diego, California 92123.

Urology—30 years of age, National Boards, American Board Eligible, wishes to practice in Connecticut. Contact: Melvyn Rosenstein, M.D., 350 East 30th Street, New York, New York 10016.

General Practitioner—The town of East Lyme is in need for two other general practitioners. Year round population of 11,000; a summer population of at least 15,000. A lovely community on the shore of Long Island Sound, is close to the Submarine Base and the Coast Guard Academy. There is an instant practice for a General Practitioner and a fully equipped office and laboratory available for rent. 50 miles from Hartford, and 10 miles from New London. The Lawrence and Memorial Hospital in New London is a 327 bed modern hospital, fully staffed and equipped, with nursing school and intensive care unit. A 40 bed addition is underway, with a new X-ray department. Contact: First Selectman, Town of East Lyme, P.O. Drawer 519, Niantic, Connecticut 06357. (203-739-6246).

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Physicians needed in the following specialties: Anesthesiology, Internal Medicine, General Medicine, **Psychiatry**, Otorhinolaryngology, Neurology, Obstetrics and Gynecology to practice in Torrington, Connecticut and surrounding communities. Modern 191 bed general, short term, voluntary hospital in Northwestern Connecticut, with all major medical and surgical specialties represented, serves a population of 50,000. Search Committee of the Medical Staff will assist qualified candidates. Write or call: Thomas H. Walker, M.D., Chairman of Search Committee, The Charlotte Hungerford Hospital, Torrington, Connecticut 06790, Phone: 203-489-0441.

Connecticut—Psychiatrists and Physicians to work in one of several newly developed specialized programs—drug dependence, alcoholism, geriatric rehabilitation, and general psychiatry. The setting is dynamic, decentralized and community-oriented. A training hospital with University affiliations with Wesleyan and Yale. Opportunity for private practice or consultation. Salary commensurate with experience and training. Starting salary range: Psychiatrist \$20,465-\$29,479; Physician \$18,826-\$27,482. Liberal benefits. Eligibility for Connecticut license required. Send all particulars in first

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letter including reference to Mehadin K. Arafah, M.D., Superintendent, Connecticut Vally Hospital, Box 351, Middletown, Connecticut.

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Warnings: Do not use dietary potassium supplements or potassium salts unless hypokalemia develops or dietary potassium intake is markedly impaired. Enteric-coated potassium salts may cause small bowel stenosis with or without ulceration. Hyperkalemia (>5.4 mEq/L) has been reported in 4% of patients under 60 years, in 12% of patients over 60 years, and in less than 8% of patients overall. Rarely, cases have been associated with cardiac irregularities. Accordingly, check serum potassium during therapy, particularly in patients with suspected or confirmed renal insufficiency (e.g., certain elderly or diabetics). If hyperkalemia develops, substitute a thiazide alone. If spironolactone is used concomitantly with 'Dyazide', check serum potassium frequently—they can both cause potassium retention and sometimes hyperkalemia. Two deaths have been reported in patients on such combined therapy (in one, recommended dosage was exceeded; in the other, serum electrolytes were not properly monitored). Observe regularly for possible blood dyscrasias, liver damage or other idiosyncratic reactions. Blood dyscrasias have been reported in patients receiving Dyrenium (triam-

terene, SK&F). Rarely, leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with the thiazides. Watch for signs of impending coma in acutely ill cirrhotics. Thiazides are reported to cross the placental barrier and appear in breast milk. This may result in fetal or neonatal hyperbilirubinemia, thrombocytopenia, altered carbohydrate metabolism and possibly other adverse reactions that have occurred in the adult. When used during pregnancy or in women who might bear children, weigh potential benefits against possible hazards to fetus.

Precautions: Do periodic serum electrolyte and BUN determinations. Do periodic hematologic studies in cirrhotics with splenomegaly. Anti-hypertensive effects may be enhanced in post-sympathectomy patients. The following may occur: hyperuricemia and gout, reversible nitrogen retention, decreasing alkali reserve with possible metabolic acidosis, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), digitalis intoxication (in hypokalemia). Use cautiously in surgical patients. Concomitant use with antihypertensive agents may result in an additive hypotensive effect.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis; rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting (may indicate electrolyte imbalance), diarrhea, constipation, other gastrointestinal disturbances. Rarely, necrotizing vasculitis, paresthesias, icterus, pancreatitis, and xanthopsia have occurred with thiazides alone.

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LAW—MEDICINE NOTES

J. Alfred Fabro, M.D.

Hospital Privileges—Connecticut

There is a general lack of understanding by Connecticut physicians about their privileges to practice in hospitals. To understand their legal status, it is necessary to establish a few generalizations, admittedly simplistic.

First, the thirty five or so charitable, voluntary hospitals in Connecticut are legally private in spite of the fact that they are tax-free, receive community financial assistance from voluntary organizations, and have received Hill-Burton funds.

Second, the applicable law is not statutory, that is, law passed by the legislature or Congress, but established in the tradition of the common law, that is, by judges in their adjudication of disputes brought before the court—in this instance between a physician and hospital. If the legislature should see fit to act in such a situation, any statute it would pass would take precedence over a decision by a judge, so long as it was constitutional. The legislature in Connecticut has not acted in this area: the legal rights of a physician to practice in voluntary, charitable hospitals.

So what is the law in Connecticut? Our highest state court has not adjudicated such a case. But there is a superior court decision, which for lack of other court decisions, acts as the "law" in Connecticut: *Edson v. The Griffin Hospital*, 21 Conn. Sup.55, 1958.

The facts: The plaintiff-physician had practiced in the hospital since 1943, doing medicine and performing some surgery. In 1954 new bylaws were adopted by the staff. He was a result denied the right to perform certain major surgical operations.

He brought suit, seeking to restrain the defendant hospital from prohibiting him from performing these operations, claiming that the rules were arbitrary and "the action of the board [of trustees] in curtailing his activities without a hearing illegal and in violation of his constitutional rights."

His first claim was that the hospital was a public corporation. If the court accepted this claim, that the hospital was legally not private, but public, a physician would have the legal right to practice in such a hospital—subject to reasonable rules. But

the court rejected his claim. The judge ruled that the hospital was a private corporation regardless of its acceptance of Hill-Burton funds, of its tax-free status, and its acceptance of community funds.

The test to the court as to whether the hospital was public or private was "whether, under the charter or corporate powers granted, they have the right to elect their own officers and directors, with the power to manage their own affairs." He found that the hospital had such a right, and was thereby legally private.

Next, were the rules arbitrary? He stated, "It is a fundamental and generally accepted rule that the courts will not interfere with the internal management of a private corporation. Questions of policy and management are left solely to the honest decision of the officers and directors, and the court is without authority to substitute its judgment for theirs. The same rule applies to private hospitals. . . . The rules adopted by the hospital effective in February 1954 were similar to those of standard hospitals. Testimony from nationally recognized authorities classed them as reasonable and in accord with modern hospital practice. They were necessary to enable the hospital to acquire and maintain an accredited standing.

"The general rule seems to be that a private hospital has the right to exclude any physician from practicing therein, and such exclusion rests within the sound discretion of the managing authorities. . . . A physician has no vested or constitutional right to practice in a hospital but merely a privilege which may be granted or denied even though his qualifications are of the highest. . . . Most of the authorities base the right of exclusion not upon the proper application of reasonable rules and regulations but upon the fundamental right of a private corporation to manage its own internal affairs. In effect, they say a private hospital may lawfully exclude a physician from its staff without assigning any reason for that exclusion."

The evidence revealed that the physician had a high standard in the community; was successful in his profession; and it in no way reflected on his skill as a practitioner or his standing in the medical profession. But the judge ruled that the rules were reasonable and not discriminatory to the

DR. J. ALFRED FABRO, Senior Attending Surgical Staff of the Charlotte Hungerford Hospital, Torrington, Conn.

plaintiff; they also applied to several others on the staff. He ruled for the hospital.

Eighteen years have passed since this decision. Though no case since has arisen in Connecticut related to the same problem, analogous cases have been adjudicated in other state and federal courts in the country, not applicable to or binding on Connecticut courts, however. The trend is toward requiring such hospitals to be fair and reasonable in their dealing with physicians. Some federal courts have in fact held that voluntary hospitals which have received Hill-Burton funds thereby lose their strictly legally private status and must grant due process to physicians both in granting and modifying or revoking privileges. However, until another such case reaches our Connecticut court, *Edson v. Griffin Hospital* remains the "law" so far as a physician's right to practice in a voluntary hospital in Connecticut.

Patients with a strong family history of hypertension will be studied on the Clinical Research Center of Yale New Haven Medical Center in an attempt to understand the cause of hypertension. There is no cost to the patient. All studies carried out will be with the full understanding and consent of the patient and in accordance with the requirements of the patient study review committees of the center. Upon completion of the study, the patient will be referred back to private physician along with a complete summary of study.

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THE IMMUNOLOGY OF MALIGNANT DISEASE by **Jules E. Harris, M.D., F.A.C.P. and Joseph G. Sinkovics, M.D., F.A.C.P., C. V. Mosby Co., 1970, 251 pages. \$15.00.**

Reviewed by: RONALD C. DeCONTI

This book applies the principles of classic immunology to the problems of malignant disease. In a small volume intended primarily for physicians concerned with the management of patients with cancer, the authors have assembled an impressive bibliography which encyclopedically reviews the current status of our knowledge of the relationship of immunology and malignancy. The authors begin by defining and reviewing the normal immune responses in man and the influence of progression of malignant disease. Tumor immunology in experimental animals is extensively analyzed for its potential applications to man. The immune deficiency states associated with malignant diseases are discussed with special emphasis on the most widely understood ones, lymphomas and leukemias. The ability of antineoplastic agents to suppress immune responses is extensively reviewed, and finally the authors describe applications of immunologic principles in attempts to actively treat malignancy in man. This little volume is quite comprehensive in many ways, particularly as it relates to tumor immunology, human deficiency states associated with malignancy and in detailing multiple studies of many agents on suppression of immune responses. The authors' intention is to provide a useful introduction to ideas and methods that may have increasing application to the investigation and treatment of cancer in man as the relationships of tumor immunology and host defense systems become more fully understood. I believe the book succeeds admirably in describing our current knowledge of the relation of immunology to malignancy and does provide the experimental background for future therapy. As yet, of course, the applications of these principles remains in its infancy. However, the information provided in this volume is undoubtedly the basis on which future investigative attempts will be made. The book describes the applications of immunosuppressive cytotoxic agents to non-neoplastic situations, the so-called "auto-immune" diseases and in organ transplantation. Beneficial effects are detailed and the point is made that the improvements in clinical disease and prolongation of graft survival may indeed be completely unrelated to the immunologic suppressant effects of these compounds. Steroids are widely used in such treatment and this volume completely neglects these compounds which have never been shown to be immunosuppressant. Anti-inflammatory effects of all these agents are largely neglected. Despite these limitations and perhaps one other—the almost total omission of the immunology of pregnancy, RH problems and choriocarcinoma—this is an excellent compendium of the problems of predicting how immune responses may affect the spread or retardation of neoplastic disorders. This volume clearly points out the difficulties of the naive assumption that immune reactions are always beneficial and that drug therapy harms the host immune reactions. Examples of the converse of these situations are presented. The book does fail to synthesize its facts into cohesive concepts though the authors can hardly be severely chastised for this inasmuch as their purpose is to present a broad view of current explorations against which clinicians may evaluate particular situations and disease states. In all I believe this is a very valuable introductory book.

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Electrocardiogram of the Month:

Atrial Fusion Complexes

Yale-New Haven Hospital
New Haven, Connecticut

Prepared by
HYMAN M. CHERNOFF, M.D.
Associate Professor of Clinical Medicine,
Yale School of Medicine
Director, Dept. of Electrocardiography
Memorial Unit, Yale-New Haven Hospital

Atrial fusion complexes result when the atria are excited by impulses arising simultaneously in two different pacemaker sites in the atria. Usually one of these sites is the sinus node while the other is usually located either in the AV junction or in the left atrium. Forward conduction of an impulse arising in the sinus node results in an upright P-wave in most leads except lead aVR, whereas retrograde conduction of an impulse arising in the AV junction or left atrium produces inverted P-waves in most leads except lead aVR. In the presence of fusion the P-wave form is intermediate between a normal sinus P-wave and a "pure" retrograde P-wave. At times fusion may be so "perfect" as to produce no visible atrial complex or one nearly isoelectric. Such fusion complexes are commonly seen during wandering of the pacemaker from the sinus node to the AV junction when both pacemaker sites discharge simultaneously before the AV pacemaker assumes sole control of both the atrial and ventricular chambers. In Fig. A the first 3 upright P-waves are of sinus origin while the last 4 inverted P'-waves are due to retrograde conduction of the impulse from the AV junction during AV junctional rhythm. The 4th P-wave is upright but of low amplitude and is consistent with partial fusion, while the 5th P-wave is nearly iso-electric and represents "perfect" fusion.

Atrial parasystole can also lead to atrial fusion complexes when the parasystolic focus and the sinus node happen to discharge simultaneously. In Fig. B, the parasystolic P-waves, labelled P', are inverted in lead 2 while the sinus P-waves are upright. Note that the interectopic intervals (P'-P') measure 34 mm. or a near multiple of 34 mm., suggesting a parasystolic rate of about 44/min. The last atrial complex in lead 2 is a fusion form in-

termediate between the sinus P and the ectopic (P'). Another atrial fusion complex is noted in lead V5.

Atrial fusion beats may also occur in the presence of AV dissociation, but this is a rare phenomenon since in AV dissociation the atria usually remain under sole control of the sinus node while the ventricles are under control of a pacemaker located either in the AV junction or in the ventricle. Lead V1 in Fig. C exhibits an iso-rhythmic AV dissociation with the atria under control of the sinus node and the ventricles under control of an AV junctional pacemaker. Because of the timing of the sinus P-wave, occurring either immediately before the ventricular complex or immediately after it, retrograde activation of the atria by the impulse arising in the AV junction is not possible since the atria are in a refractory state following their activation by the sinus impulse. In lead V3, however, the first 2 ventricular complexes are followed by inverted P'-waves indicating retrograde activation of the atria by the impulse arising in the AV junction. The last 3 ventricular complexes are followed by upright P-waves at a RP interval which is shorter than the RP' interval present in association with the first 2 beats in this lead, indicating that the sinus impulse activated the atria before the retrograde impulse from the AV junction could reach the atria. The 3rd ventricular complex in this lead is followed by an atrial complex which is intermediate in configuration between the inverted P'-wave and the upright sinus P-wave indicative of simultaneous activation of the atria by the sinus impulse and the AV impulse.

The presence of atrial fusion complexes is not important from the clinical standpoint. However, their recognition is useful in understanding the electrophysiological events responsible for the formation of electrocardiographic complexes.

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What is the Role of the County President-elect?

As president-elect she should evaluate the organization, the meeting programs, the project programs, relationship with the medical society, etc. She should plan for her year, organize ideas, work on appointments and committee appointments. She should develop her plan, her organization, know what you want. She should also develop a notebook for chairmen with job descriptions. What else should she be doing in this waiting, learning and listening role?

She has already determined her goals and that of the organization as president-elect. She knows what she wants to accomplish and the purpose of these accomplishments. She wants to be successful. But what is success? Is it 100% membership? Is it big fund raising? Is it a good feeling among the members with a sense of accomplishment for doing some job well?

She has also determined the necessary committees the organization needs during her year. She has evaluated the structure and knows what needs to be done.

She needs to be concerned with: Meeting Program—How many meetings a year? If the Bylaws spell it out, she is stuck. When should the meetings be, day, morning, afternoon? Program for meetings important, publicity, hostess committee, telephone committee etc. What else concerns this area? Project committee—Community Survey as to the health needs, medical society requests, other projects of interest. How else do we determine project program? A program development committee a good idea. Hospitality program—membership survey, house to house visitation, telephone committee, hostesses at meetings, baby sitting service, etc. What other committees could function under hospitality? Public Relations Program—working with other

groups, a guest day luncheon. Working with the newspaper discussing projects of community interest rather than the fashion show luncheon or golf tournament. Working with the medical society, letting them know what you are doing and working with the executive secretary. What else can be done?

What else does she need to do to get her year organized? The interest, enthusiasm and leadership ability of the county president will determine the success of the local auxiliary.

Planning state meetings:

1. Work with arrangements chairmen to get the best possible room arrangements. Are the rooms large enough—or too large? Will the seating arrangement be comfortable? Will the heating and ventilation be satisfactory? What about good lighting, workable microphones, etc.

2. Plan your program. Make a time schedule, keep it moving, add spice by varying the presentations. Brief speeches and a fast moving meeting are a must for a peppy program.

3. Plan your publicity—Use more than one approach. Personal letters, phone calls are very important with the "We want you" approach.

4. Hostess committee very important. See that no one is standing alone. Do not let the committee hide behind a table just to pass out name tags, sell tickets, etc. They should be meeting and greeting and introducing people.

5. Speakers: There are many excellent resources for speakers. A good idea to check and see if an honorarium is required or just expenses.

6. Good meetings don't just happen; well thought out, careful planning is required. Have confidence in yourself and remember the magic of praise.

OBITUARY

William H. Pomeroy, M.D.

1915-1970

Dr. William H. Pomeroy was born in Stamford, Connecticut on November 7, 1915. He was educated in the Windsor schools and graduated from Loomis Institute in 1933, Trinity College in 1937, and the University of Maryland School of Medicine in 1943.



Upon completion of internship at Hartford Hospital he entered the U.S. Army Medical Corps. During World War II his assignments included Chief of Medical Service of Crissy Annex at Letterman General, and Commanding Officer of Letterman General Hospital Convalescent Unit.

In 1947 Dr. Pomeroy entered and continued general practice in Poquonock, Connecticut. He was a member of the Windsor Medical Society, Hartford County Medical Society, A.M.A., Connecticut State Academy of General Practice of which he was President from 1952-1969 and the Connecticut State Medical Society.

Appointed Physician in Charge of Warren House, rehabilitation unit for the problem drinker, Dr. Pomeroy held that position since its inception in 1962. He was also attending physician to Agricultural Workers Hospital, Bradley Field, since 1947. In 1969 he received a citation for Distinguished Service to the people of Connecticut by the Connecticut Medical Service.

The areas in which he served will mourn the loss of an unusual citizen with a high sense of civic responsibility; a physician who was a loyal

friend and a rugged individualist whose energetic and musical talents lighted and made more pleasant many medical meetings. He expired of an acute coronary at his summer home in Moultonboro, N.H. He is survived by his wife Jeanne Gilbert Pomeroy and four children; William, Maxwell, Anne and Mrs. Rachel Hopkins.

Daniel E. Mack, M.D.

In Memoriam

Saltzman, Jacob A., New York Medical College, 1933. Dr. Saltzman was a dermatologist in the Waterbury area since 1934. He was attending physician at St. Mary's Hospital and Waterbury Hospital, 1942-1945. Dr. Saltzman was a member of the New England Dermatological Society, and the American Dermatological Academy. He was also a member of the Connecticut State Medical Society and the American Medical Association. He died December 10, 1970, at the age of 64.

Smyth, Ivor Patrick, National University of Ireland, 1948. Dr. Smyth was a radiologist in the Windham area since 1957. He was an assistant professor of radiology at the University of Minnesota and a fellow in radiology at Yale University before going to Manchester, where he accepted a post as head radiologist at the Willimantic Hospital. Dr. Smyth was a member of the Connecticut State Medical Society and the American Medical Association. He died December 10, 1970, at the age of 47.

Whiting, Richard C., McGill University, 1924. Dr. Whiting was a general practitioner in the Hartford area since 1927. He was a member of the Connecticut State Medical Society and the American Medical Association. Dr. Whiting died December 26, 1970, at the age of 73.

NEW BOOKS RECEIVED

The Immunology of Malignant Disease: Jules E. Harris, M.D. and Joseph G. Sinkovics, M.D. The C. V. Mosby Company, St. Louis, 1970, 251 pp. \$15.00.

Surgery and Biology of Wound Repair: Peacock and Van Winkle W. B. Saunders Company, Philadelphia, Pa. 1970. 630 pp. \$21.50.

A History of Poliomyelitis: John R. Paul, M.D., Yale University Press, 1970, 486 pp. \$15.00.

Connecticut Regional Medical Program

Funded in the amount of \$36,216 from the CRMP challenge grant in July of 1970, a Blood Bank Survey and Supporting Services Program was begun under the auspices of the University of Connecticut Health Center and with the cooperation of the Red Cross Blood Program and the 41 hospitals with blood banks. The program has been approved for CRMP support in 1971 in the amount of \$49,365.

The medical advisory committee of the Blood Program made up of hematologists, surgeons, and pathologists is functioning as the review and evaluation committee for the program. Dr. Alfred J. Katz, faculty member of the Department of Laboratory Medicine at the University of Connecticut and medical director of the Red Cross Blood Program, and I are jointly supervising the project's development. The hospital survey is being carried out on both the medical and the technical aspects of blood product distribution and use by Sarah Graf, M.B.B. Chir, and Richard Menga, M.T., A.S.C.P.

The purpose of the program is to acquire information regarding current and future utilization of blood products in the hospitals and to explore methods of more effective service and continuing education in the field of blood transfusion therapy.

The project is building from the already well established foundation provided by the Connecticut Red Cross Blood Program which is responsible for the collection and processing of blood components in the state. There is wide variation in the use of blood and blood products in different hospitals. Many of the factors involved in such variation are unknown. Modern medical practice and blood bank practice have both been altered substantially. In some areas of the state these changes have occurred without coordination between those caring for patients and those responsible for the blood bank. In addition, larger hospitals have modes of operation different from smaller hospitals. Blood Bank policies established by the pathologist responsible for the blood bank and the attitudes of physicians and surgeons in the hospitals seem to be important factors in the amount of blood used, in the proportion of components such as Red Blood Cells and Platelets and in the amount of blood returned to

the Blood Center. Great expenditure of human energy and money is involved in this vital resource, yet there is evidence that a substantial amount of blood is outdated in some hospitals and that some physicians are not keeping up-to-date in their practices in the use of blood products.

Although there are well established lines of communication and transportation between the Red Cross Blood Center in Hartford and the various hospitals spread throughout the state, there is little cross communication and interchange of blood and blood products between hospitals. The situation has been likened to a wagon wheel with all the spokes from the hub but with little interconnecting the rim. Cross communication between hospitals with regard to blood inventory practices and special needs will be improved by this CRMP program. A telephone blood inventory information system has been implemented to maintain a state-wide blood inventory at all times. If there is unused blood in one hospital of a type needed by a patient in another hospital, the information availability allows the blood bank to locate such blood rapidly. A computerized blood inventory is being developed, with the cooperation of the Blue Cross, using an IBM computer and the terminals already located in major hospitals. The use of a computer card to keep track of each unit of blood or component will eliminate transcription errors and allow the hospital blood bank record the use of the blood by manually punching on the card the date used. The computer system holds promise of making more information available with less time involved.

It has been found that over the last 10 years, the Red Cross Blood Program has increased its collection of blood in keeping with the increase in the number of patient days of hospitalization (27%) but the amount of blood actually used by these hospitals has increased only 11%. Bloodmobile unit visits are being coordinated so that blood collections will correspond with the blood utilization in hospitals to avoid any waste of this precious human tissue. It has been recognized that more Rh negative blood is needed to maintain safe blood bank levels than is produced by random bleeding. A donor bleeding station is being planned in the

Blood Center to help meet this and other special needs requiring type specific blood collection.

Although the survey is well underway and lines of communication are being established, there remains the major task of implementing the interchange of blood products and the continuing education of physicians and technologists utilizing blood products. With continuing support from CRMP it is expected the major part of this program will be underway in 1971.

Edward E. Morse, M.D.

Chief, Hematology Section, University of Connecticut School of Medicine; Medical Director, Connecticut Red Cross Blood Program.

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Board of Governors

New Haven County Medical Association

The Board of Governors of the New Haven County Medical Association met at Rapp's Paradise Inn in Ansonia, Connecticut on Thursday, November 12th. Dr. Stewart J. Petrie presided. Twenty-five board members and twelve guests joined in the Indoctrination and Orientation program for twenty-one provisory members who were made full active members at the end of the program. They were: Daniel Albert, New Haven, Benito Bonaccorsi, Waterbury, John Boyd, New Haven, Richard Cooper, New Haven, Andrew Diggs, Waterbury, André Boissevain, Seymour, Dara Dubash, New Haven, Edward Etkind, New Haven, Gerald Fishbone, New Haven, Graeme Hammond, New Haven, Marshall Holley, New Haven, David Kaminisky, Milford, Harold Kaplan, Meriden, Albert Levis, Hamden, Richard Levy, Derby, Maurice Marcus, New Haven, Gary Mombello, New Haven, Kenneth Pruett, New Haven, Milton Sangree, Jr., New Haven, Henri Schapira, New Haven, Thomas Spackman, New Haven.

The matter of compulsory attendance was discussed. The statistics reveal one member suspended for missing five consecutive meetings and eleven members suspended for missing four consecutive meetings. This reflects a very small percentage of the 896 active members subject to the rule out of an overall membership of 1,042.

Vice-President James H. Root, Jr. reported that COMPAC will be instituting a new drive for membership and will direct an on-going program of political education during 1971.

An extensive overhaul of the County By-Laws is being conducted by Chairman Samuel Climo and his committee. Preliminary recommendations were received for further study by the Board.

Councilor and immediate past President Kurt Pelz reported that the CUISS thrust of CRMP is still at issue as regards safeguards for the patients right to confidentiality. Dr. Pelz further reported on the AMA Boston meeting which dealt with the subject of "peer review" and the "Bennett Amendment." He stated that by January 1971 the matter should be fairly well clarified.

Considerable discussion revolved about the matter of usual, customary and reasonable fees. The Board of Governors voted to reaffirm its position that fees charged by New Haven County physicians must be reasonable and that the organization will do all in its power to see to it that this objective is gained.

Respectfully submitted,
William L. West, M.D., *Clerk*

PLEASE MARK YOUR CALENDAR

179th ANNUAL MEETING

CONNECTICUT STATE

MEDICAL SOCIETY

APRIL 27, 28, 29, 1971

HARTFORD HILTON HOTEL

HARTFORD

PLAN NOW TO ATTEND

MEETING NOTICES

GENERAL

April 27-29—Tuesday-Thursday
179th Annual Meeting of the Connecticut State Medical Society

Hilton Hotel, Hartford, Connecticut
Theme for Sessions: Infectious Diseases

April 30-May 20

Spring Postgraduate Medical Seminar Cruise to the Mediterranean on Board the "Raffaello"

Albany Medical College
Albany, New York 12208

Contact: American College of Physicians, 4200 Pine Street, Philadelphia, Pennsylvania 19104

OTOLARYNGOLOGY

May 3-5—Monday-Wednesday
"The Vestibular System in Otologic Diagnosis"

New York Eye and Ear Infirmary, 310 East Fourteenth Street, New York, New York 10003.

ALLIED MEDICINE

March 24,—Wednesday 9:00 A.M.

Conference on Dependent Nursing Functions

Park Plaza Hotel, New Haven

Sponsored by the Connecticut State Medical Society, Connecticut Nurses Association, Connecticut League for Nursing and the Connecticut Hospital Association.

CARDIOLOGY

May 13-15—Thursday-Saturday

7th Annual Cardiovascular Symposium

St. Francis Hospital

114 Woodland Street, Hartford, Connecticut

HEMATOLOGY

March 15-18—Monday-Thursday

"Modern Advances in Hematology"

New York Hospital—Cornell Medical Center

New York City

Contact: Ralph L. Nachman, M.D.

INTERNAL MEDICINE AND SURGERY

September 15-June 1—Tuesday

Lecture Series: "Medical Emergencies"

Lawrence and Memorial Hospitals

New London, Connecticut

Contact: Edward Gipstein, M.D., Director of Medical Education. (442-0711 ext. 361).

ONCOLOGY

March 8-12—Monday-Friday

"Advances in Medical Oncology"

Texas Medical Center

Houston, Texas

ANNUAL COUNTY ASSOCIATION MEETINGS

MARCH 18, 1971—THURSDAY

Windham County Medical Association

Location: Not determined

MARCH 25, 1971—THURSDAY

New Haven County Medical Association

Waverly Inn, Cheshire

3:00 P.M.—Meeting 7:00 P.M.—Dinner

Chairman: Anthony Mancini, M.D.

MARCH 31, 1971—WEDNESDAY

Hartford County Medical Association

Hartford Hilton

5:00 P.M.—Meeting 7:30 P.M.—Dinner

Chairman: Julian Mandell, M.D.

APRIL 6, 1971—TUESDAY

Fairfield County Medical Association

Details not available at this time.

APRIL 13, 1971—TUESDAY

Litchfield County Medical Association

White Hart Inn, Salisbury

5:30 P.M.—Meeting 7:00 P.M.—Dinner

Chairman: Eileen M. Pratt, Sharon

Science News

Cutaneous Interferon Production in Cancer Patients Infected With Varicella or Vaccinia

(*New Engl. Jr. Med.*: 283, 1182, November 26, 1970, Armstrong, R. W., et al) Thirteen of 14 persons without cancer produced at least 1000 U per 4 ml of vesicle fluid interferon (VF-IF) during varicella infection (that is herpes zoster or chickenpox). Three of seven patients with cancer in which varicella infections developed were leukopenic and produced less than 100 U per 4 ml.

These three patients had further viral spread and two of them died from the infection. One of them was treated with an interferon inducer polyinosinic without increasing interferon levels or clinical improvement.

The other four patients were not leukopenic and had interferon levels greater than 1000 U per 4 ml when studied late during the infection, and all recovered. Between 30 and 170 U per 4 ml of interferon were demonstrated from crust extracts of three patients recovering from serious complications of smallpox vaccination.

The ability to produce high levels of cutaneous interferon perhaps related to white-cell function, may be important in determining the outcome of varicella infections.—L.H.N.

Intracranial Arteries Mended

(*JAMA*: 212, 2045, June 22, 1970) Dr. M. G. Yasargil, a Swiss Neurosurgeon, states that operation on arteries of the brain is not difficult in experienced hands. The arteries operated upon have ranged in size from 1-3 mm. Microinstruments, suture materials, such as needles of 100 μ diameter, and tiny shunts serving as mechanical forms for the anastomosis have been developed.

Dr. Yasargil reported on microsurgery of 180 intracranial aneurysms, and Dr. Theodore Kurze, a pioneer in the application of the microscope to neurosurgery reported on a series of 150 intracranial aneurysms. The use of the surgical microscope has halved the mortality and morbidity in such cases.

The values of the microvascular surgery has been not so much what has been done to the individual patients, though this is important, but the fact that

it has given a more systematic and practical approach to brain surgery. Previously, bleeding was the greatest problem.

Now one can dissect, manipulate and coagulate with better visibility and work on the brain in the way one thinks about it. "It is changing all kinds of perspectives."—L.H.N.

Sputum Cytology Urged For Spotting Lung Cancer

(*JAMA*: 212, 2036, June 22, 1970) Dr. Devendra Saksena maintains that lung cancer in the peripheral areas shows up first on X-rays of the chest, but that sputum cytology gives the first indication of lung cancer arising in the major bronchi and larynx.

Carcinomas affecting the major bronchi—70 per cent of all lung cancer diagnosis need not wait for positive roentgenograms for then it is too late to effect surgical cure. He found 7 out of 8 patients with no radiologic evidence who showed positive cytology.

Sputum cytology may also be verified in the post operative follow-up of patients since two of his eight patients were positive and required more than one primary resection. Dr. Saksena recommended sputum cytology every 6 months in patients at risk and every 2 months in patients already operated upon.—L.H.N.

Drug Combination Used In Severe Cancer

(*JAMA*: 212, 2042, June 22, 1970) So far 108 patients listed as stage IV have been treated with a combined 5-fluorouracil with sodium warfarin and survived distinctly longer than otherwise expected.

Sodium warfarin potentiates the effect of 5 fluorouracil on the primary tumor to where pronounced regression of some tumors occurs. Dr. William R. Waddell said it also keeps 5-fluorouracil in the bloodstream much longer.

Patients receive a comparatively low dose-10 mg/kg/wk of 5-fluorouracil. The experimental program got started when a patient received both 5-fluorouracil and warfarin. He was in an advanced stage of cancer and was given warfarin for phlebitis.—L.H.N.

Connecticut Medicine

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Manuscripts, including references or bibliography, must be typewritten, double-spaced on white paper 8½ x 11 inches with adequate margins on firm paper. The original copy, not the carbon copy should be submitted. Carbon copies or single spaced manuscripts will not be considered. Authority for approval of all contributions rests with the Editorial Board, and the Board reserves the right to edit any material submitted. Receipt of manuscripts will be acknowledged and unused manuscripts returned. Accepted manuscripts become the permanent property of the JOURNAL and may not be reprinted elsewhere without permission from both the author and CONNECTICUT MEDICINE. The author is responsible for all statements made in his work, including changes made by the copy editor.

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Connecticut State
Medical Journal

Volume 35/March 1971/Number 3

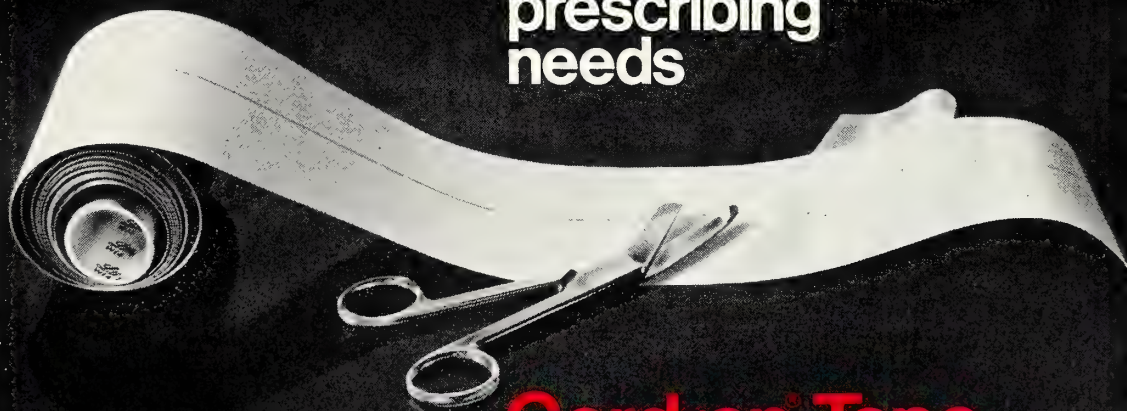


MEDIEVAL HOSPITALS

(See page 173)

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**PLAN TO ATTEND 179th ANNUAL MEETING
APRIL 27, 28, 29, 1971—HARTFORD HILTON HOTEL, HARTFORD**

IF MORE MEN CRIED



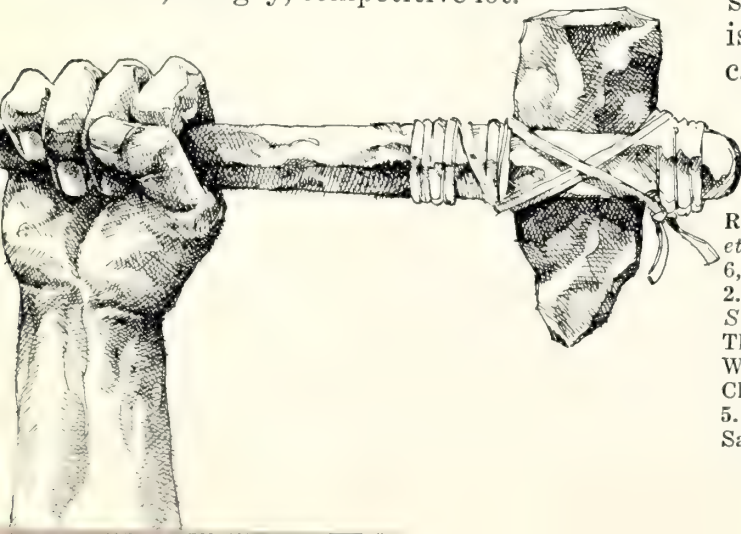
At least seventy-five out of one hundred adults with duodenal ulcers are men.¹

Why? It may be significant that duodenal ulcer patients tend to crave recognition and are "especially vulnerable to threats to their manly assertive independence."²

Hypersecretion—an atavistic response.

Stewart Wolf, who, with Harold G. Wolff, studied the personalities of duodenal ulcer patients, wonders if masculine competitiveness is related to "an atavistic urge to devour an adversary." It is striking, he reports, that an accentuation of gastric acid secretion and motility can be "induced in ulcer patients by discussions that arouse feelings of inadequacy, frustration and resentment."²

By chance? A lean, hungry lot. Was the link between emotions and gastric hyperacidity acquired through mutation to serve a purpose? During man's jungle period of evolution, the investigator points out, a male dealt with a foe by killing and devouring it. "It may be more than coincidence," he concludes, that peptic ulcer patients appear to be "a lean, hungry, competitive lot."³



Big boys don't cry. If more men cried, maybe fewer would wind up with duodenal ulcers. But men will be men—the sum total of their genes and what they are taught. Schottstaedt observes that when a mother admonishes her son who has hurt himself that big boys don't cry, she is teaching him stoicism.⁴ Crying is the negation of everything society thinks of as manly. A boy starts defending his manhood at an early age.

Take away stress, you can take away symptoms.

There is no question that stress plays a role in the etiology of duodenal ulcer. Alvarez⁵ observes that many a man with an ulcer loses his symptoms the day he shuts up the office and starts out on a vacation. The problem is, the type of man likely to have an ulcer is the type least likely to take long vacations or take it easy at work.

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References: 1. Silen, W.: "Peptic Ulcer," in Wintrobe, M. M., et al. (eds.): *Harrison's Principles of Internal Medicine*, ed. 6, New York, McGraw-Hill Book Company, 1970, p. 1444. 2. Wolf, S., and Goodell, H. (eds.): *Harold G. Wolff's Stress and Disease*, ed. 2, Springfield, Ill., Charles C Thomas, 1968, pp. 68-69. 3. *Ibid.*, p. 257. 4. Schottstaedt, W. W.: *Psychophysiologic Approach in Medical Practice*, Chicago, Ill., The Year Book Publishers, Inc., 1960, p. 163. 5. Alvarez, W. C.: *The Neuroses*, Philadelphia, Pa., W. B. Saunders Company, 1951, p. 384.

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Precautions: In elderly and debilitated, limit dosage to smallest effective amount to preclude development of ataxia, over-sedation or confusion (not more than two capsules per day initially; increase gradually as needed and tolerated). Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider individual pharmacologic effects, particularly in use of potentiating drugs such as MAO inhibitors and phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions (e.g., excitement, stimulation and acute rage) have been reported in psychiatric patients. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically.

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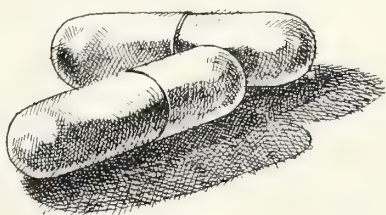
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Subscription rate for non-members \$15.00; Student-Members, interns and residents \$7.50; single copy \$1.50.

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THE PRESIDENT'S PAGE

In his Presidential Address at the Opening General Session of the American Public Health Association at the Ninety-Eighth Annual Meeting in Houston, Texas, October 26, 1970, Dr. Paul B. Cornely stated "In 1932 a private group, the Committee on the Costs of Medical Care, published a comprehensive report on the ways and means by which the delivery of health care could be more effectively organized. It recommended comprehensive community medical centers, prepaid financing, comprehensive health planning and community participation". (AJPH, Jan. 1971) These recommendations are familiar to all of us today. What many of us did not know was that they resulted from a study made 40 years ago, presumably to solve the problems of that era. Knowledgeable as I thought I was in this area, I also was ignorant of this fact. I have previously stated that the health planners of today are recommending the remedies for the problems of the 1960's to solve those of the 1970's. It appears that I was in error and I humbly apologize. They are recommending the remedies of the 1930's to solve the problems of the 1970's.

What is very significant in the above quotation from Dr. Cornely's address is the phrase "the ways and means by which the delivery of health care could be more effectively organized". The key-word is "organized". No mention is made of quality, availability, accessibility, cost or any other facet of health care—just organization. Today this is what the planners are planning—organizations. Naturally these organizations must have administrators and staffs and who is better able to fill these positions than the planners and their staffs? Also naturally, these people will be well-paid. An example of the high cost of administrative staff can be gleaned from the 1971 Budget of the Connecticut Regional Medical Program, where slightly more than 25% of the 1.3 million dollars is allocated for central administration. This does not include the administrative costs incidental to the programs funded with the remaining 974,000 dollars. This brings to mind the story told me by a former President of the Connecticut State Dental Society. It seems there was a grant of \$50,000 for a dental program for school children. After hiring a director and staff there was \$5000 left to provide dental care for the children.

I have said in the past that New Haven is the "test-tube" of the planners. However, after listening to the discussion at a recent meeting of a sub-committee (Community Health Programs) of the Yale University Council, I must admit another error. It would appear that New Haven is past the "test-tube" phase and may become a "battleground". The members of this sub-committee are committed philosophically to "organizing" the health care of New Haven residents to the complete exclusion of the private practitioner. I was told that if the private practitioner wanted to be included in the overall "system" of providing medical care, he would have to devise the "plan" or "system". Their "system" called for neighborhood centers and/or multi-specialty groups. Of course it is anticipated that federal funds (tax dollars) would be available for planning and possible implementation of the plans.

What makes this so disturbing is that New Haven has in operation the federally-funded Hill Health Center for indigents under 21 yrs. of age and two prepaid groups in different stages of development, both in the process of recruitment of personnel. The Yale University Health Center (for faculty, students and employees and their dependents) expects to be in operation this year. The Community Health Center Plan (under the direction of I. S. Falk, Ph.D. and sponsored by the New Haven Labor Council, AFL-CIO) is in the building stage. The planners point to these as successful examples of their "system" even though they are not yet operative, and use these as the prototypes or models for future health care. Before advocating more of the same shouldn't the planners wait and see whether they are successful, whether they fill the people's needs and how well accepted they are?

I have referred to New Haven as a possible "battleground" in that neither of the two latter plans are directed to the indigent but rather will solicit their subscribers from the group now being cared for by the private practitioner. It will be interesting to see whom the people choose. As non-profit organizations they will have the advantage of tax-free buildings and possible federal or foundation grants in competing with the private practitioner in the economic area. The other possible "battleground" may be the determination of professional policy. It would be hoped that the physicians employed by these groups will insist on their determining professional policy and not permit layman or physician administrators to do so. I include the physician administrator in the same class as the layman since if he has not been or is not involved in patient care he is no better qualified to set professional policy than is a layman.

What is equally disturbing is that the planners are not taking an unbiased look at health care in New Haven and integrating what is good into the overall picture, but rather replacing it with their system. Forty years ago the Committee on the Costs of Medical Care made some recommendations so now let's do it. The people, our patients, are not being consulted. The planners, like Big Brother, know best. And the bureaucracy at HEW concurs.

Much light on this subject is contained in a review in the N.Y. Times (Jan. 20, 1971) of a recently published book "The American Health Empire" (A Report From the Health Policy Advisory Center. Preposed by Barbara and John Ehrenreich. Random). A few sentences from this review are relevant: "What they are saying is that medical institutions as now constituted are not designed for the benefit of the people who use them. Well, since so many are "non-profit", whom do they benefit? THEMSELVES (capitals mine)." "The big hospital complexes, empire-minded, want to take more hospitals, schools, health centers, add buildings for personnel, and thus be able to demand more Federal and foundation funds." "The most fascinating side of the discussion is the impersonal way in which hospitals, bureaucracy and cost expand—almost as if by a law of nature." What we are seeing in New Haven is another instance of the "American Health Empire" at work.

Morris A. Granoff, M.D.

179th ANNUAL MEETING
of the
CONNECTICUT STATE MEDICAL SOCIETY

Hartford Hilton Hotel
10 Ford Street, Hartford, Connecticut

April 27, 28, 29, 1971

COMMITTEE ON PROGRAM OF THE SCIENTIFIC ASSEMBLY



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HOWARD LEVINE, *New Britain*

MALCOLM M. ELLISON, *New London*

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MESSAGE FROM THE PRESIDENT

Welcome to the 179th Annual Meeting of the Connecticut State Medical Society. The House of Delegates will meet on Tuesday, April 27, to transact the business of the Society which will include action on the reports of Officers and Chairmen of Standing and Ad Hoc Committees, resolutions from County Associations and individual members, and election of officers for the coming year. Members of the Society who are not members of the House of Delegates are welcome to be present at the session.

The Scientific Sessions will be held on Wednesday and Thursday, April 28 and 29, and will be devoted to Infectious Diseases and the Use of Antibiotics. The Program Committee has arranged a comprehensive overview of the subject and has been able to obtain outstanding speakers both from Connecticut and elsewhere in the country. In addition, each morning you will be able to choose from four Round Table Discussions on specific aspects of the subject. These will be held prior to the General Sessions.

As in previous years there will be scientific, commercial and art exhibits which you can visit during the intermission, and at your leisure.

The Annual Dinner of the Society will be held Wednesday evening, April 28, and will be preceded by a Social Hour. The new President of the Society will be formally inaugurated at this time. This is a social occasion, so come with your wife, meet old friends, make new ones, and have an enjoyable evening.

It is most important that each of us participate in a Continuing Education Program and this session on Infectious Disease and the Use of Antibiotics is relevant for all of us. Attendance at this Annual Meeting should be part of every member's Continuing Education Program.

MORRIS A. GRANOFF

GENERAL INFORMATION — READ CAREFULLY

REGISTRATION

The registration desk will be located on the mezzanine floor and everyone attending the meeting is requested to register. There will be no charge for registration and all members of the Society will be given a guest luncheon ticket when and only if they register.

PARKING

There are ample parking facilities at the hotel and in the surrounding area. If you wish, you may drive up to the door of the hotel and an attendant will park your car for you.

TELEPHONE

Telephone messages will be received at Hartford 249-5611.

LUNCHEONS

Luncheons will be served in the Cities Rooms on the Mezzanine, on April 28 and April 29 and ALL MEMBERS OF THE SOCIETY REGISTERING WILL BE THE GUEST OF THE SOCIETY. PLEASE REMEMBER A LUNCHEON TICKET WILL BE GIVEN TO MEMBERS ONLY IF THEY REGISTER.

HOTEL ACCOMMODATIONS

Persons who wish to remain overnight should make reservations not later than two weeks prior to opening date of the meeting. Reservations will be held until 6:00 P.M. on the day of arrival, unless later hour is specified. Please indicate in your letter that you are attending the Connecticut State Medical Society meeting. Your letter should be directed to the Front Office Manager, Hartford Hilton Hotel, 10 Ford Street, Hartford, Connecticut.

ANNUAL DINNER

The Annual Dinner will be held at the hotel on Wednesday, April 28, 1971. The social hour will be at 6:15 P.M. and the dinner at 7:00 P.M. All persons attending the dinner will be the guests of the Society at the social hour which will begin *promptly* at 6:15 P.M. and end *promptly* at 7:00 P.M. Your reservation for dinner should be sent in as soon as possible.

PROGRAM

General scientific sessions will be held on Wednesday and Thursday in the Terrace Room and Section meetings will be held in the rooms listed in the program. "Round Table Discussions" will again be held on Wednesday and Thursday mornings.

EXHIBITS

All the exhibits will be located in the ballroom. Physicians should take advantage of the opportunity to review "under one roof" what is new and timely by visiting the commercial and scientific exhibits.

ROUND TABLE DISCUSSIONS

Members of the Society are invited and encouraged to participate in the new learning technique; Round Table Discussions, or "Learning Panels". Four of these panels will be held on Wednesday, April 28 and four on Thursday, April 29. The subject, time and place for each is published in the Program that follows. The respective "Learning Panels" will be chaired by experienced physicians who will lead their groups, of not more than 15 participants, through in-depth examination of the topics assigned. Active participation in the group discussion will be limited to members who have pre-registered. Registration forms will be mailed to members with the Program of the meeting. Members, who have not pre-registered, will be welcome to attend the panels as observers only, within the limits of available seating capacity.

ANNUAL MEETING OF THE HOUSE OF DELEGATES

Tuesday, April 27

Terrace Room Mezzanine

Presiding: KENNETH F. BRANDON, *Hartford, Speaker of the House*
FRANK K. ABBOT, *Waterbury, Vice-Speaker of the House*

7:30 REGISTRATION OF DELEGATES

Continental Breakfast for Delegates and Official Guests

8:30 CALL TO ORDER

OPENING SESSION

REFERENCE COMMITTEE HEARINGS

1:15 LUNCHEON—Fourth Floor Rooms

3:00 CALL TO ORDER—Terrace Room

FINAL SESSION

6:30 ADJOURNMENT

Reception and Dinner for Delegates and Official Guests—Cities Rooms—Mezzanine

SCIENTIFIC PROGRAMS

Wednesday, April 28

MORNING SESSIONS

8:30 REGISTRATION—Mezzanine

ROUND TABLE DISCUSSIONS

9:00-10:00 Fourth Floor in Rooms Designated

OFFICE MANAGEMENT OF COMMON INFECTIOUS DISEASES—Room 424

Group Leader: ERNEST ATLAS, *Norwalk, Connecticut*

INFECTIONS IN THE TRAVELER—Room 420

Group Leader: MARTIN E. GORDON, *New Haven, Connecticut*

THE VALUE OF THE LABORATORY IN THE MANAGEMENT OF INFECTIOUS DISEASES—Room 416

Group Leader: ADRIAN A. VANSOESTBERGEN, *New Britain, Connecticut*

WHAT TO DO UNTIL THE CULTURE COMES BACK?—Room 412

Group Leader: GEORGE THORNTON, *Waterbury, Connecticut*

10:00 INTERMISSION TO VISIT EXHIBITS

TERRACE ROOM

Presiding: WILLIAM F. ECKHARDT, JR., *New Canaan, Connecticut*

10:30 APPROACH TO THE PATIENT WITH FEVER OF UNKNOWN ORIGIN

ROBERT G. PETERSDORF, *Seattle, Washington*; Professor and Chairman, Department of Medicine, University of Washington School of Medicine; Physician-in-Chief, University of Washington Hospital.

11:10 COMPROMISED HOST

FRED S. ROSEN, *Boston, Massachusetts*; Associate Professor of Pediatrics, Harvard Medical School; Senior Associate in Medicine, Children's Hospital Medical Center.

11:50 USE OF THE NEWER ANTIBIOTICS

MORTON N. SWARTZ, *Boston, Massachusetts*; Associate Professor of Medicine, Harvard Medical School; Chief Infectious Disease Unit—Physician, Massachusetts General Hospital

12:30 INTERMISSION TO VISIT EXHIBITS

1:00 LUNCHEON—Cities Room

AFTERNOON SESSION

TERRACE ROOM

Presiding: HOWARD LEVINE, *New Britain, Connecticut*

2:00 BACTERIAL ENDOCARDITIS

ARNOLD N. WEINBERG, *Weston, Massachusetts*; Professor of Medicine, Harvard Medical School; Chief of Medicine, Cambridge Hospital

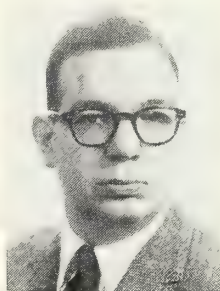
2:40 ANTIGENS ASSOCIATED WITH VIRAL HEPATITIS

ROBERT W. MCCOLLUM, *New Haven, Connecticut*; Professor of Epidemiology, Yale University School of Medicine; Associate Physician, Yale-New Haven Hospital

3:30 INTERMISSION TO VISIT EXHIBITS



ROBERT G. PETERSDORF
Seattle, Washington



FRED S. ROSEN
Boston, Massachusetts



MORTON N. SWARTZ
Boston, Massachusetts



ARNOLD N. WEINBERG
Weston, Massachusetts



ROBERT W. MCCOLLUM
New Haven, Connecticut

Wednesday, April 28

MEETINGS OF SECTIONS OF THE SOCIETY AND GUEST ORGANIZATIONS

SECTION ON ANESTHESIA

3:30 P.M.

Hunt Memorial Building, 230 Scarborough Street, Hartford

President: EDMUND T. WELCH, JR., *Hartford*

Secretary: HENRY T. BONNEY, *Hartford*

3:30 ANNUAL BUSINESS MEETING

5:00 RALPH M. TOVELL MEMORIAL LECTURE

Speaker: ALAN W. CONN, *Toronto, Ontario; Chief of Anesthesia, Hospital for Sick Children; Professor of Anesthesia, University of Toronto*

Subject: ANESTHETIC PROBLEMS IN PEDIATRIC ORTHOPEDICS

6:00 SOCIAL HOUR

7:00 DINNER

SECTION ON DERMATOLOGY

2:30

Room 424

President: HENRY R. CORWIN, *Norwalk*

Secretary: RALPH L. PARKER, *Bridgeport*

THE IMMUNAL PATHOLOGIC MECHANISM IN DERMATOLOGY

IRWIN LEPOW, *Hartford, Connecticut; Professor and Head, Department of Pathology, University of Connecticut Health Center*

JOINT MEETING

SECTION ON GENERAL PRACTICE

President: LEO P. GIARDI, *New Britain*

Secretary: JOHN C. WRIGHT, *Manchester*

SECTION ON INTERNAL MEDICINE

President: VINCENT A. DeLUCA, JR., *Derby*

Secretary: ALLEN CHETRICK, *New Haven*

3:30

Rooms 436-440

PANEL DISCUSSION: THE MANAGEMENT OF CHRONIC RENAL FAILURE—CURRENT PROBLEMS AND FUTURE PROSPECTS

Moderator: BERNARD LYTTON, *New Haven, Connecticut; Associate Professor of Urology and Chief of Urology, Yale-New Haven Hospital*

Panel:

ROBERT S. BROWN, *New Haven, Connecticut; Assistant Professor of Medicine and Medical Director of Hemodialysis and Kidney Transplant Service, Yale-New Haven Hospital*

JOHN A. GOFFINET, *West Haven, Connecticut; Assistant Professor of Medicine and Director of Hemodialysis Unit, West Haven Veterans' Administration Hospital*

BLAIR L. SADLER, J.D., *New Haven, Connecticut; Assistant Professor (Law), Yale University School of Medicine; Co-Director Trauma Program, Yale-New Haven Hospital*

SECTION ON OBSTETRICS AND GYNECOLOGY

3:30

Room 416

President: HOWARD S. ECKLES, *Bridgeport*

Secretary: PETER A. GOODHUE, *Stamford*

THE EFFECTS OF ANALGESIA AND ANESTHESIA ON THE NEWBORN

FREDERICK W. HEHRE, *New Haven, Connecticut; Associate Professor of Anesthesia, Yale University School of Medicine*

Wednesday, April 28

SECTION ON OPHTHALMOLOGY

3:30 Boston-Buffalo Rooms

President: WILLIAM B. BREWSTER, JR., *Hartford*

Secretary: FREDERICK D. WILLIAMS, *Stamford*

3:30 RADIOISOTOPES IN OPHTHALMOLOGY

JAMES O'ROURKE, *Hartford, Connecticut; Professor of Ophthalmology, University of Connecticut Medical Center*

4:30 BUSINESS MEETING

SECTION ON PATHOLOGY

3:30 Room 412

President: ROMEO A. VIDONE, *Torrington*

Secretary: HOLLIS N. TRUAX, *Norwalk*

PANEL DISCUSSION: INFECTIOUS HEPATITIS

Panel:

JOSEPH R. BOVE, *New Haven, Connecticut; Associate Professor of Laboratory Medicine, Yale University School of Medicine*

ROBERT W. MCCOLLUM, *New Haven, Connecticut; Professor and Chairman, Department of Epidemiology and Public Health, Yale University School of Medicine*

EDWARD E. MORSE, *Hartford, Connecticut; Associate Professor of Laboratory Medicine, University of Connecticut Health Center*

MARTIN ROSS, Ph.D., *Hartford, Connecticut; Chief Virology Section, Connecticut State Department of Health*

Audience Participation Invited

SECTION ON PROCTOLOGY

3:30 Room 408

President: BERNARD J. KAPLAN, *Hartford*

Secretary: SANFORD SAVIN, *Bridgeport*

UNUSUAL ANORECTAL LESIONS

HARRY J. TAMONEY, *Hartford, Connecticut; Department of Surgery, St. Francis Hospital*

SECTION ON RADIOLOGY

3:30 New York-Washington Rooms

President: RICHARD B. HARVEY, *New Haven*

Secretary: CARL W. SCHEER, *Meriden*

ABDOMINAL GAS PATTERNS—A NEW APPROACH TO AN OLD PROBLEM

SOLOMON SCHWARTZ, *New Haven, Connecticut; Professor of Radiology, Yale University School of Medicine*

CONNECTICUT DIABETES ASSOCIATION

3:30 Room 420

President: DAVID S. WILCOX, *Hartford*

Secretary: JAMES C. HART, *Hartford*

SIGNIFICANCE OF MILD GLUCOSE INTOLERANCE

THEODORE S. DANOWSKI, *Pittsburgh, Pennsylvania; Professor of Medicine, University of Pittsburgh*

Wednesday, April 28

WOMAN'S AUXILIARY TO THE CONNECTICUT STATE MEDICAL SOCIETY

TWENTY-SEVENTH ANNUAL MEETING

WETHERSFIELD COUNTRY CLUB

Wethersfield, Connecticut

President: MRS. JOHN J. MENDILLO, *Hamden, Connecticut*

Recording Secretary: MRS. GABRIEL INGENITO, *Woodbridge, Connecticut*

Corresponding Secretary: MRS. JOHN J. MILICI, *West Haven, Connecticut*

10:00 REGISTRATION

10:30 BUSINESS MEETING

1:00 LUNCHEON

Guest Speaker: MRS. WILLARD SCRIVNER, *East St. Louis, Illinois, First Vice-President, Woman's Auxiliary to the American Medical Association*

Wednesday, April 28

ANNUAL DINNER OF THE SOCIETY

HARTFORD HILTON HOTEL

10 Ford Street, Hartford

Social Hour 6:15 P.M.

Dinner 7:00 P.M.

PROGRAM

Presiding: MORRIS A. GRANOFF, *New Haven*

PRESENTATION OF GUESTS AND DELEGATES FROM STATE MEDICAL SOCIETIES

FIFTY YEAR MEMBERSHIP AWARDS

Howard Spencer Colwell, *New Haven*

Edward Nicholas DeWitt, *Fairfield*

George Albin Lundberg, *Manchester*

Louis Herman Nahum, *New Haven*

Stanley Hart Osborn, *West Hartford*

Fessendon Newport Otis, *Bloomfield*

Karl Tristram Phillips, *Putnam*

G. Gardner Russell, *Hartford*

David Sussler, *Norwich*

Carl Leonard Thenebe, *New Hartford*

James Alfred Wilson, *Meriden*

INAUGURATION OF INCOMING PRESIDENT

FREDERICK CLARENCE WEBER, JR., *Greenwich*

PRESIDENT'S ADDRESS

DINNER MUSIC

Thursday, April 29

MORNING SESSIONS

8:30 REGISTRATION—Mezzanine

ROUND TABLE DISCUSSIONS

9:00-10:00 Fourth Floor in Rooms Designated

INFECTIONS OF THE HIPPIE GROUP—Room 424

Group Leader: GEORGE W. LEWIS, *Hartford, Connecticut*

COMPLICATIONS RELATED TO ANTIBIOTIC THERAPY—Room 420

Group Leader: RICHARD QUINTILIANI, *Middletown, Connecticut*

NEWER VIRAL AND POLYSACCHARIDE VACCINES—Room 416

Group Leader: MARTHA L. LEPOW, *Hartford, Connecticut*

PULMONARY INFECTIONS—RADIOLOGIC EVALUATION—Room 412

Group Leader: FRED M. H. ZITER, JR., *Hartford, Connecticut*

10:00 INTERMISSION TO VISIT EXHIBITS

TERRACE ROOM

Presiding: PAUL F. McALENNY, *New Haven, Connecticut*

10:30 WHAT YOU SHOULD KNOW ABOUT URINARY TRACT INFECTIONS

EDWARD H. KASS, *Boston, Massachusetts; Professor of Medicine, Harvard Medical School; Director, Channing Laboratory, Boston City Hospital; Editor, Journal of Infectious Diseases*

11:10 MENINGITIS—NEWER CONCEPTS

HORACE L. HODES, *New York City; HERBERT H. LEHMAN, Professor and Chairman, Department of Pediatrics, Mount Sinai School of Medicine of the City University of New York; Director, Department of Pediatrics, Mount Sinai Hospital*

11:50 PNEUMONIA—1971

LOUIS WEINSTEIN, *Boston, Massachusetts; Professor of Medicine, Tufts University School of Medicine; Chief, Infectious Disease Service, New England Medical Center Hospitals*

12:30 INTERMISSION TO VISIT EXHIBITS

1:00 LUNCHEON—Cities Rooms

AFTERNOON SESSION

TERRACE ROOM

PROGRAM ARRANGED WITH CONNECTICUT SOCIETY
OF AMERICAN BOARD SURGEONS

Presiding: GERALD O. STRAUCH, *Stamford, Connecticut*

2:00 PREVENTIVE ANTIBIOTICS

JOHN F. BURKE, *Boston, Massachusetts; Associate Professor of Surgery, Harvard Medical School; Visiting Surgeon, Massachusetts General Hospital; Chief of Staff, Shriners Burns Institution, Boston Unit*

2:45 THE SYSTEMIC BIOLOGY OF CRITICAL SEPSIS

LOUIS R. M. DEL GUERCIO, *Livingston, New Jersey; Director of Surgery, St. Barnabas Medical Center, Professor of Surgery, New Jersey College of Medicine*

3:30 DISCUSSION—QUESTIONS AND ANSWERS

INTERMISSIONS TO VISIT EXHIBITS



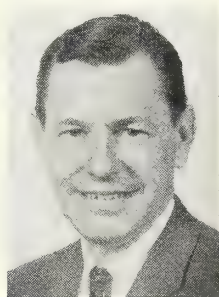
EDWARD H. KASS
Boston, Massachusetts



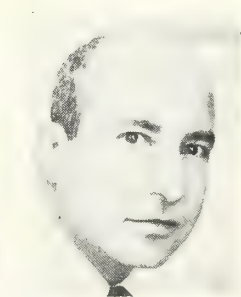
HORACE L. HODES
New York, New York



LOUIS WEINSTEIN
Boston, Massachusetts



JOHN F. BURKE
Boston, Massachusetts



LOUIS R. M. DEL GUERCIO
Livingston, New Jersey

Thursday, April 29

MEETINGS OF SECTIONS OF THE SOCIETY AND GUEST ORGANIZATIONS

SECTION ON ALLERGY

3:30 Room 408

President: JOSEPH I. EPSTEIN, *Middletown*

Secretary: HENRY SHERWOOD, *Middletown*

RELATIONSHIP OF SKIN SENSITIZING AND BLOCKING ANTIBODIES TO IMMUNITY IN ALLERGIC DISEASES
JOHN T. CONNELL, *New York City; Research Director, Institute of Allergy, Roosevelt Hospital*

SECTION ON GASTROENTEROLOGY

3:30 Room 404

President: SAUL S. MILLES, *New Haven*

Secretary: ROBERT S. ROSSON, *Hartford*

ALCOHOLIC HEPATITIS

JOHN T. GALAMBOS, *Atlanta, Georgia; Division of Gastroenterology, Emory University School of Medicine*

SECTION ON NEUROSURGERY

3:30 Room 420

President: ROBERT H. STURMAN, *Waterbury*

Secretary: DONALD W. COOPER, *New London*

BUSINESS MEETING

SECTION ON ORTHOPEDICS

4:00

Hunt Memorial Building, 230 Scarborough Street, Hartford

President: CHARLES T. FLYNN, JR., *Meriden*

Secretary: MARTIN L. KARNO, *New London*

INTERESTING FEATURES OF BENIGN BONE TUMORS AND TUMOR SIMULATORS (Fibrous, Cartilaginous Tumors and Interesting Facets of Solitary and Aneurysmal Bone Cysts)

ALEX NORMAN, *New York City; Director of Diagnostic Roentgenology, Hospital for Joint Diseases*

SECTION ON OTOLARYNGOLOGY

3:30 Rooms 412-416

President: JOHN A. KIRCHNER, *New Haven*

Secretary: ROBERT S. ROSNAGLE, *New Haven*

MANAGEMENT OF THE CHILD FOR TONSILECTOMY

LESTER L. COLEMAN, *New York City; Orthopedic Surgeon*

SECTION ON PHYSICAL MEDICINE

3:30 Cities Rooms, Mezzanine

President: SUNG J. LIAO, *Waterbury*

Secretary: EDWIN L. LYTLE, *Wallingford*

PROGRAM TO BE ANNOUNCED

SECTION ON PREVENTIVE MEDICINE

3:30 Room 424

Chairman and Secretary: J. Howard Johnston, *Wethersfield*

PREVENTIVE ASPECT OF CANCER

BERNARD J. KAPLAN, *Hartford; Department of Surgery, St. Francis Hospital*

CONNECTICUT ASSOCIATION OF MEDICAL EXAMINERS

12:30 Rooms 436-440

President: SAMUEL B. RENTSCH, SR., *Derby*

Secretary: JOSEPH E. DALEY, *Waterbury*

12:30 LUNCHEON FOR MEDICAL EXAMINERS, CORONERS, AND GUESTS (Dutch Treat)

Guest Speaker: ELLIOT M. GROSS, *Hartford, Conn.; Chief Medical Examiner, State of Conn.*
BUSINESS MEETING TO FOLLOW—ELECTION OF OFFICERS

Thursday, April 29

**CONNECTICUT SOCIETY OF AMERICAN BOARD SURGEONS
TERRACE ROOM**

President: ROBERT N. DAVIE, *Waterbury*

Secretary: JAMES H. FOSTER, *Hartford*

2:00 SEE GENERAL PROGRAM—Thursday 2:00 P.M.

4:00 GROUP DISCUSSION—THE FUTURE EDUCATION AND EVALUATION OF SURGEONS

Moderators: JAMES H. FOSTER, *Hartford*; WILLIAM A. WHALEN, *Willimantic*

5:00 SOCIAL HOUR

6:30 DINNER

Guest Speaker: HARRY SCHWARTZ, Ph.D. *New York City*; *Science Editor, New York Times*

Subject: THE SURGEON AND THE AMERICAN MEDICAL REVOLUTION

(Any member of the Connecticut State Medical Society interested in attending this dinner should contact a member of the Connecticut Society of American Board Surgeons)

TECHNICAL EXHIBITS

Ames Company, Div. Miles Laboratories, Elkhart, Ind.

Boston Medical Laboratory, Inc., Boston, Mass.

Coca-Cola Company, USA

Arthur W. Eade Insurance Agency, Hamden, Conn.

Cameron Miller Surgical Instruments Company, Chicago, Ill.

Encyclopedia Britannica, Chicago, Ill.

Group Insurers, Inc., New Haven, Conn.

Eli Lilly & Company, Indianapolis, Ind.

Merck, Sharp & Dohme, West Point, Pa.

Parke, Davis & Company, Detroit, Mich.

Reed & Carnick, Kenilworth, New Jersey

Respiratory Services Corp., Darien, Conn.

Roche Clinical Laboratories, Nutley, N.J.

William H. Rorer, Inc., Fort Washington, Pa.

Scholastic Systems, Hackensack, New Jersey

The D. G. Stoughton Company, West Hartford, Conn.

Surgeons & Physicians Supply Company, Boston, Mass.

SCIENTIFIC AND EDUCATIONAL EXHIBITS

Surgical Implications of Coronary Artery Disease

Cardiothoracic Group, New Haven, Conn. (Drs. M. G. Carter, G. L. Wilson,

E. C. Neville, P. R. Fazzone, D. S. Dock)

Patient Education for Diabetes

Connecticut Diabetes Association and Conn. State Department of Health

Special Approaches in the Management of the Hemiplegic

Gaylord Hospital, Wallingford, Conn.

Pharmacologic Properties and Clinical Effect of Estrogen in the Human

The Wilson Research Foundation, Inc., New York City

Early Detection for Glaucoma

Connecticut Society for the Prevention of Blindness

Section on Ophthalmology, Connecticut State Medical Society

Rehabilitation

American Cancer Society, Connecticut Division, Inc.

Cancer in Connecticut

Connecticut Tumor Registry, Conn. State Department of Health

Cancer Coordinating Committee, Connecticut State Medical Society

Nutrition Education for All Age Levels

Connecticut Dairy and Food Council, Inc.

Orbital Blowout Injuries

Isaac Horowitz, M.D., Bridgeport, Philip M. Gaynes, M.D., Fairfield

Woman's Auxiliary to the Connecticut State Medical Society

ART EXHIBIT

Connecticut Physician's Art Association

SPECIAL NOTICE

Hospital residents, interns and medical students are cordially invited to attend this meeting.

Artists—Attention!

GENERAL INFORMATION: The Connecticut Physicians' Art Association is planning the 1971 Art Exhibit in conjunction with the annual meeting of the Connecticut State Medical Society. The following is submitted for guidance to art hobbyists.

WHERE: Hartford Hilton Hotel, Hartford, Connecticut

WHEN: April 27, 28, 29, 1971

ELIGIBILITY: Physicians (members of the Connecticut State Medical Society) and their families are cordially invited to join this group of art hobbyists. (In the case of children and other members of physician's family, kindly indicate relationship to sponsor.) All previous exhibitors are invited to show their works at this meeting, and new exhibitors are welcomed. Works eligible will include oil, water colors, tempora, black and white etchings, photography, pastels, collages, mixed media and sculpture. Paintings over 24 x 30 will be hung only at the discretion of the art committee depending upon available space.

JUDGING: Art works will be judged in four categories: 1. Children under 16 years (children over 16 will be judged with adults); 2. Beginners; 3. Intermediates; 4. Professionals. Pictures should be framed and wired for hanging. The exhibit will be judged by professional artists.

COST: A hanging fee of two dollars (\$2.00) will be charged for each entry and fifty cents (50¢) for a child under 16 years, with two entries per artist. (Space requirements have caused our limiting the entries to two this year, as just noted.)

HOW TO APPLY: Entry blanks will be mailed to former exhibitors and also may be obtained by writing to the addresses of the committee listed below. One-half of the entry blank should be submitted to me at the below address with your check prior to April 16, 1971. The other half should be attached to the picture. Make checks payable to the Connecticut Physicians' Art Association. Please fill in entry blanks completely so that entry can be categorized early in the above noted four categories.

SUBMITTING: Art works must be submitted to a representative of the Art Association in the lobby of the Hartford Hilton Hotel on Sunday, April 25, 1971 between the hours of 12 and 3 P.M. Parking temporarily near the side entrance is possible for the few minutes involved in dropping off these art works. It may be possible to

aid exhibitors with the transportation of art works by contacting members of the committee noted below. These art works must be picked up on Thursday, April 29, 1971 between 12 and 4 P.M. Members of the art committee or their representatives will be in attendance at the display throughout the exhibit at the state meeting. The Connecticut State Medical Society, the hotel (nor the Art Association) can assume no responsibility for loss or damage of any cause to art works.

Under no condition can art work be accepted after April 16th.

If further information is needed, the following persons may be contacted:

Eugene Rightmyer, M.D., President, 114 Sherman Avenue, New Haven; Mrs. Orvan Hess, Vice President, 29 Old Orchard Road, North Haven; Ann Murphy, 8 E. Normandy Drive, West Hartford, Chairman, Art Committee, Women's Auxiliary, CSMS; Mrs. John Shoukimas, 26 Pheasant Hill Drive, West Hartford; Edward Williams, M.D., 580 Hillside Avenue, Naugatuck; Herman Austrian, M.D., 935 White Plains Road, Trumbull; Kurt Oster, M.D., 880 Lafayette Boulevard, Bridgeport; Stewart J. Petrie, M.D., 56 Minerva Street, Derby; Mrs. Mark Hayes, 163 Ridgewood Avenue, North Haven; Mrs. Henry Sherwood, Penfield Hill Road, Portland; Mrs. Clifford Wilson, 19 East Town Street, Norwich; Mrs. Lowell Olson, 85 River Road, North Haven.

Eugene Rightmyer, M.D., *President*
Connecticut Physicians' Art Association

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A Community Mental Health Approach To The Emotionally and Perceptually Handicapped In The Public Schools

Leonard Gold, M.D.

A public school system, as an arm of the community effort and as an expression of its aims, inevitably becomes involved in the mental health problems of that community. In recent years, there has been a search for a community approach to mental health. The school system can function as one type of community mental health project. Others have conducted such projects which have some aspects of a community type approach.¹⁻³ This communication describes the effect of bringing a community mental health approach to the organization of special classes, in the public school system of Stamford, Connecticut.*

Since education is compulsory, the Board of Education finds itself with some children whose academic performance is limited or completely inhibited due to their distorted relationships with peers and adults. This may be due to emotional disturbances or primary disturbances in cognitive function such as capacity to perceive and to conceptualize. The symptomatic behavior of these disturbances calls attention to the student's problems. These symptoms are the well-known inattentiveness, restlessness, clowning, daydreaming, striking out at others, etc. Because the students are required to remain in school, even though the symptomatic behavior interferes with their education, the Board of Education is required to handle these difficulties for the community. The leaders of the school system then find themselves having to develop a program to cope with the problems underlying these symptoms.

DR. LEONARD GOLD, Associate Professor of Psychiatry, New York Medical College, New York; Associate Attending, Metropolitan Hospital, New York; Attending Psychiatrist, and Director of Psychiatric Education, Stamford Hospital, Stamford, Conn.

* Dr. Joseph B. Porter, Superintendent of Schools. Mrs. Bea Murdock, Coordinator of Special Classes.

Rationale and Orientation

In order to carry out its task, the school system has to have an orientation and a program. A program, developed by the appropriate administrative staff members in consultation with mental health professionals, is determined by the problems presented as well as by the orientation of the approach. At this point consideration of the specific approach, as viewed by the psychiatrist working with the Stamford Public School system, is required. The student's problems fall into two major categories: those with disturbances primarily in the emotional area and those with disturbances primarily in the cognitive area. The latter, in general, is revealed by more specified signs of disturbance in the capacity for perception and conceptualizing. For brevity, I will call the former emotionally disturbed "E.D.", and the latter perceptually handicapped "P.H."

In the families in which the E.D. children grow, one frequently sees the characteristics of some type of alienation among the members of the family and the identified "problem child". Distance rather than closeness, coolness, mechanical interest rather than affection, interest in specific achievement goals rather than primary interest in helping the child develop in his ways, are some of the usual characteristics. This atmosphere is not conducive for the development of a style of relating to adults and peers effectively. Since self-worth is developed out of inter-personal relations as well as out of achievements, the child can develop only a limited sense of his capacity, ability and of his sense of worth. He cannot meet certain specific tasks of maturation, i.e., responding effectively to others' requirements, expressing his own requirements, controlling his impulses and expressing his requirements with some awareness that they will be respected.

In the families in which the P.H. children grow, the distance or alienation develops through a different pathway. With disturbances in perception

and conceptualizing, the child does not learn as rapidly or as well as is expected. He is not developing within the accepted usual rate. With this may come parental disappointment, resulting in either overt or covert demands for the child to live up to more common types of development, or resulting in abandonment of all encouragement or all expectations. The conflicts between parent and child arising from increased demands or from decreased encouragement can lead to distance and alienation within the family relations. The P.H. child is characterized by a primary cognitive disability as well as a secondary emotionally-based disability.

When the child arrives in school, he has to relate both to his peers, with whom he has to collaborate, and to adults whose direction he has to follow; at the same time he needs to be developing himself. The child whose relationships in the family have been characterized by alienation has not developed methods for meeting requirements, controlling his impulses, or developing respect for himself or others. He thus comes to school lacking the necessary tools with which to relate to others and with which to learn. This creates a conflict within him which in turn brings about anxiety. The anxiety inclines him to withdraw. The way he withdraws and compensates for his limitations develop the symptoms which bring his problem to the attention of his teachers. In his difficult position, he has not been able to develop a sense of self-respect and self-worth, through appropriate academic and social performance.

At this point, the unbroken circle of behavior, productive of mental and emotional disturbance and mental illness must be interrupted. The school system is faced with the task of finding a program to help the student perform more appropriately. It heeds the call of the symptomatic behavior and attends to the child by examining him, by delineating more sharply the bases for his difficulties, by prescribing special techniques for his schooling and socializing.

Method of Project

In order to carry out its task, the school system develops a program to include: (1) methods for the teacher to identify the problem; (2) experienced professionals in the mental health and related areas, who are capable of diagnosing, understanding the presenting symptoms, and recommending to the teacher appropriate approaches; (3) methods of communication between mental health and teaching professionals, i.e., early and continuous consultations; (4) procedures to re-evaluate and for

eventual redispotion of the student; (5) evaluation of the extent of the school system's contribution to the individual student's maturation.

The following is a program within the Stamford Public School System: The teacher made her request for examination of the student by answering a questionnaire describing the student's maladaptive behavior and attempts to deal with it in class. The student was then examined by a diagnostic team consisting of a teacher coordinator, social worker, psychologist, speech therapist, neurologist, pediatrician, and psychiatrist. The team members in consultation with each other at regular meetings used their respective findings to come to a definitive recommendation.

Among the recommendations were: placement in a special class for the emotionally-disturbed or perceptually-handicapped, or return to regular class with or without the aid of an itinerant teacher, or a special class for the language-handicapped, or placement in residential treatment. In addition, the recommendations included details to understand the child's usual mode of reacting and specific perceptual handicaps for the purpose of modifying the teaching methods and approaches to the child. Further recommendations included psychiatric therapy, consultation with and guidance for the parents, drugs such as amphetamines or tranquilizers.

Since such school problems are known to be multi-faceted, the professionals of a number of disciplines were included in the diagnostic procedure, allowing for a multi-variable combination of recommendations for management. The special classes established were for children from 7 to 10 years, with a teacher-student ratio of 1 to 6-8. Some classes had a teacher's aide.

The class structure included the following: (1) specific and limited times for academic work in groups; (2) time for individual work with the teacher; (3) free time from academic work to participate in playing both in groups and alone; (4) repeated clarification to the student of the class requirements; (5) clarification of certain consequences of disruptive behavior in class; (6) giving credit and recognition to steps in making efforts; (7) special modified techniques of teaching to fit the student's present needs and abilities. These techniques when appropriate included: short assignments within the child's attention span, encouragement to continue in spite of temporary failures, encouragement for group collaboration, group projects, carrying out predetermined consequences for disruptive behavior, special visual motor, auditory techniques of

teaching, allowance for deviating behavior while stimulating collaboration; (8) partial participation of the special class as a whole with regular classes, e.g., at lunch or gym periods.

Regular consultation periods were held between teachers and psychiatrist and when necessary with other team members. Consultations revolved around handling the continued difficulties in classes as prescribed by the symptomatic behavior. Consultation periods were held with the principals of the schools where the special classes were housed.

Teacher, social workers, and parents had regular contacts. The teacher clarified to the parents what was being done to handle the special problems and thereby encouraged the parents to support the student's attendance, to help with the homework and to carry out consequences of disruptive class behavior. With some parents, the requirement was to attend formal therapeutic sessions along with the child. Most of the children did not visit a psychiatrist for definitive psychotherapeutic sessions.

Other agencies of the community participated in this project. Catholic Charities, Family and Children Services, State Welfare Department, Psychiatric Clinic for Children, and privately practicing psychiatrists attended meetings of the Diagnostic Team. These were coordinated efforts to manage the school problem presented by the student. This was an extension of the multi-faceted and yet co-ordinated approach from a community mental health viewpoint.

After six to twelve months, the students seen in this program were re-evaluated as to their development, academically and socially. In consultation between teacher and members of the Team, a new disposition was made, either to return the pupil to regular classes or to retain him longer in special class, or to return him to regular classes, part-time.

Data of Experiences for 1965-1968

Within a period of two and one-half years, the Diagnostic Team evaluated 78 children and re-evaluated 58 of these 78. Table 1 delineates the variety of dispositions.

TABLE 1

Total Eval.	To E.D. Class	To P.H. Class	To Regular Class	To Lang. Class	To Itin. Teacher
78	27	14	17	6	1

(E.D.: Emotionally-Disturbed Class; P.H.: Perceptually-Handicapped Class; LANG.: Language-Disability Class; ITIN.: Itinerant Teacher)

Of the 47 recommended for some type of special classes, 29 were placed in such classes in the school system. Of the other 18, seven are on the waiting list for one of the special classes and eleven were referred to a school situation or residential treatment outside of the Stamford School System. Of the 13 for whom Table 1 shows no disposition, some were referred to the mental retardation section and some to a hospital for treatment. Their disposition was not a relevant data to the topic of this paper.

Of the 29 placed in special classes in the Stamford School System, Tables 2 and 3 show the movement of the students so placed between March, 1965 and June, 1968.

TABLE 2
MOVEMENT OF STUDENTS PLACED IN THE E.D. CLASS 1965-1968

Placed in E.D. Class	Return to Regular Class	Length in E.D. Class	Remain in E.D. Class	Residential Treatment
19	5	1-2 yrs.	13	1

TABLE 3
MOVEMENT OF STUDENTS PLACED IN THE P.H. CLASS 1965-1968

In P.H. Class	Return to Regular Class	Length in P.H. Class	Remain in P.H. Class	Residential Treatment	Change to E.D. Class
10	2	1-2 yrs., 4 mos.	6	1	1

Three of the 29 students in the special classes moved, leaving 26 to follow up. Seven of the 26 students were able to return to regular classes. The other 19 have shown improvement in their social behavior, ability to focus and attentiveness to the extent that they are able to learn in school. They are not disruptive of the total class functioning and have learned some methods of relating more effectively with their peers.

Discussion

The data regarding movement from the E.D. and P.H. classes was combined. Two factors influenced this decision. One, all the pupils with perceptual disturbances had secondary disturbance in their psychologic and social functioning. This created additional alienation from others. Two, the goals of both types of classes were the same; to return the student to a level of appropriate functioning, academically and socially. The techniques of the classes varied to suit the needs of the child in order to achieve the same goals. In the P.H. classes, in addition to the special techniques of communication developed for perceptual and language handicapped,

the teaching approach was modified to deal with the negativistic attitude, the angry approach; to deal with impulsivity and uncontrolled behavior; to help him begin to learn collaborative ways.

For a number of reasons, *psychotherapy* concomitant with placement in special classes was not recommended or could not be carried out. The movement from the special classes and the improvement within the classes were influenced by the nature of the experiences within these classes. The structure of the program permitted a number of *new experiences* for the child. His special needs arising from his difficulties were recognized. He was given consideration and respect even with his difficulties. He began to sense he was not helplessly floundering but was being helped in a specific way. The structure and limitations of the class and of the specific assignments were repeatedly clarified to him and expectations were made of him to live within and live up to the structured situation. When he found it difficult or impossible to meet the requirements, these difficulties were respected. At the same time, he was expected to reapply himself. If he did not, he would find himself with consequences not to his liking; e.g., not to be able to participate in play periods, having to go home earlier than others, not being able to participate in a joint class venture. He gradually learned self-control as well as more consistent self-application.

Out of this he had an experience in which he received respect but also had to give it. As he was able to apply himself more consistently to the two major tasks: to learn academically and to develop satisfying social relations, the student began to develop a sense of his own ability in these two major tasks of his life. Given the new sense of abilities, his motivation to extend and apply himself increased. Self-motivation became more apparent. At first the teacher would have to actively return him to the assignment against the active or passive opposition. Later, the opposition was reduced. Still later, the student found it useful to participate lest he be left out. Then he began to find satisfaction in his own achievement. At this point, the child wished to complete the assignment, participate in a class cooperative venture, and even contribute his own ideas. When the teacher found ways of communicating with him and in turn the student responded, the latter developed a knowledge of communication with adults. This reduced the alienating and isolating aspects of his life, and made him ready for regular class participation.

Another aspect of the class structure was the consistent approach which said to the student: "You are part of a group, all here for the same purpose and same tasks. You are expected to participate jointly with me, the teacher, and your peers to work at your tasks." Thus, the program did not emphasize a one-to-one relationship between teacher and pupil. The latter had to, from within himself, call upon appropriate attitudes and behavior useful in regular classes. Even though shortage of personnel may make the *group approach* more pragmatic, I wish to emphasize that the group approach is inherently more appropriate.

Parental involvement was stimulated by the teacher for conferences, for presentation of the child's status, for invitation to participate in helping the child be at school, for listening to the parent's difficulties. The teacher thus became a catalyst for the parent's increased participation which, in turn, motivated the parent to be more involved. One can, at this point, postulate that whatever increased involvement the parent had, helped to reduce the atmosphere of alienation for the child. One may further postulate that this reduction helped to alleviate some of the original conditions leading to the schooling problems.

The parents were also involved through the school social worker. She would clarify and focus on the parent's problems and attitudes regarding education and the school system. Help was offered with improving living conditions, whenever feasible. This ventilation and clarification influences the reduction of the atmosphere of alienation between parent and child.

When a school system decides on a program of special classes and its related activities, it sets into motion a number of other forces which effect the development of that student. Recognition of the problem within the child and directing expanded effort for resolution, elevates those difficulties into a position of respectability. In establishing a diagnostic team, an appropriate and realistic *multi-faceted* view is given to the problem. The presence of members of the mental health professions brings into awareness that the goal is one of maintaining mental health and preventing mental illness. The members of the system become more aware of the nature of the problem.

When financial decisions have to be made, the mental health aspects of schooling are included. The official city bodies responsible for finances have to give due consideration to this aspect. The mental

health associations, the parents' groups, the medical societies have to become informed and do become informed about such a program and its project. The people in the community who are informed are more likely to become proponents when budgets are considered on a city and state level.

Out of this experience, in the program, the student begins to be aware that he in his nature is not necessarily excluded from the stream of social life and at the same time something of his continued effort, attention and focusing is necessary. He learns about tools with which to relate. Some of the tools acquired along the way are: paying attention, focusing, listening to others and being listened to, directing self into meeting requirements. In attitude, the student is learning that there is room for individuation as well as for group relatedness. Through the programming and the project the student learns to redirect himself away from an alienated style of life into a more "relatedness-with-people" style.

The *psychiatrist* involved in this project has a position based on his expertise in the area of human interpersonal and intrapersonal dynamics, and on what he learns *in* this new experience. He is affected *by* the new experience of this project, as well as affecting *it*. He helps the school personnel focus on the area of intrapersonal and interpersonal dynamics. He creates awareness of the difficulties *in* and resistance *to* change within students, teachers and others of the school system. He has to be aware of his own resistance to change with the changing conditions of his new experience. Administration as well as teachers need information regarding the dynamics. There are long-standing differences of emphasis between people focusing on academics and those focusing on the social, psychologic service aspects of schooling. The psychiatrist can help direct these individuals with varying focuses into the one direction of total management of the student with his handicaps.

It is common to observe that teachers and others are not aware of their limitations in this total management. The psychiatrist can be helpful in having them become aware of these limitations. The negative reactions to limitations can adversely affect their real ability to help and can develop alienating type of experiences for teachers and student alike. In creating awareness, teacher and others are in a position to avoid these alienating forces.

During consultation with the teachers, he is able to encourage their innovative ideas. During consultation with representatives of administration, he

is able to consider such questions as the physical placement of special classrooms, or the addition of temporary structures for these classes. The psychiatrist considers these administrative problems in light of their effect on reducing or emphasizing alienating experiences. From his position, he may for the school system to use its assets to meet the mental health needs of its pupils. As he participates on these various levels, his experience teaches him another dimension in mental health and illness. It broadens his awareness of the "community-in-function". It helps the psychiatrist and psychoanalyst to develop a community mental health approach.

From the experiences of such a school project, certain *recommendations* become apparent. The addition of a more organized psychotherapeutic management would speed up and enrich the student's development of a style of life that would adapt itself appropriately to studying and socializing. Therapy should be prescribed at the time when it is clear that the rigidity of the intra-psychic dynamics will not permit the child to call upon his resources to adapt to the structure of the special classes. This clarity may be present at the original diagnostic work-up. But often it is not. The actual experience in the special class may be necessary, at first, to clarify the need for psychotherapy. Psychotherapy that is undertaken should begin by focusing the therapeutic effort around the schooling problems. A more compulsory, regular attendance by the parents in group sessions would help them to work on the distance in their relationship to their child. A program needs to be developed that would include parents' participation in the actual education of the child. Parents require, often, day-to-day guidance and prescription for dealing with such children. The availability of mental health personnel on a day-to-day basis, or as needed, should be incorporated into such a community mental health project. The continued in-service training of teachers for the special classes is essential. Teachers need to learn more about visual-auditory-motor disturbances, the psychodynamics of resistances to develop, the limitations in teaching certain students. The administrators of this type of a project need to develop methods of communication regarding the project with such significant segments of the community as mental health association, medical societies, parent-teacher organization, psychiatric associations, organizations developing goals and direction for community level action and with the Board of Education itself.

Summary

The public school system as an arm of the total community responsibility and endeavor for education is in an eminent position to contribute to the mental and social maturation of the students. It is also in a position to eliminate factors noxious to mental health and to develop its own community mental health project. To achieve a position which contributes to mental health, it can create a program with a new structure for students who show symptoms of emotional disturbance and perceptual handicap with secondary emotional disturbance. The program includes specially organized classes, a diagnostic team of mental health and related professionals to evaluate and prescribe management of the student and his schooling. The program utilizes a variety of techniques which improve and develop communications with the student. This helps the latter to develop tools for academic performance and social relations. The paper discusses an orienta-

tion which gives understanding of the program. The child's way of development results in alienation, isolation which prevents him from learning the tools necessary for academic studies and social relations. Out of the new experiences within the new program the student begins to sense new abilities, new values and new collaborative efforts. In doing so, he helps himself overcome the effects of the old ways which prevented the development of more mental health. To the extent that the people at the school help in creating the program, to that extent the school contributes to mental health in the community.

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Epsilon-Aminocaproic Acid Therapy In Cyclophosphamide-Induced Bladder Hemorrhage - A Case Report -

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Synopsis-Abstract

A case of refractory bladder hemorrhage attributed to prolonged cyclophosphamide therapy is presented in which dramatic cessation of bleeding resulted from epsilon-aminocaproic treatment. This therapeutic approach is a logical consequence of the current understanding of urinary fibrinolytic activity.

No similar approach to the control of severe cyclophosphamide-induced bladder hemorrhage has been fully reported before.

Cyclophosphamide therapy is attended by sterile hemorrhagic cystitis in about 5% of all patients who receive the drug.¹⁻⁴ Fortunately this complication is usually short-lived, often lasting less than one week after the cyclophosphamide is discontinued.³⁻⁸ On occasion, however, and particularly following prolonged cyclophosphamide administration, the hemorrhagic cystitis may be severe, protracted^{4,5,9,10} and even lethal.² In these instances the cystitis often is chronic and fibrosing.^{6,9}

Therapeutic measures to arrest chronic cyclophosphamide-induced bladder hemorrhage such as fulguration, mechanical evacuation of bladder clots, repeated irrigation, topical medicinal applications and blood transfusions almost invariably have been fruitless.^{5,10} Only procedures which have diverted

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urine from the bladder allowing healing to occur have been effective. Thus, cyclophosphamide-induced bladder hemorrhage has ceased quickly following suprapubic cystostomy with local packing¹¹ bilateral ureteral catheterization,¹⁰ and ileal loop diversion.⁹

The purpose of this report is to illustrate the successful use of antifibrinolytic therapy in a patient with severe hemorrhagic cystitis attributed to cyclophosphamide.

Case Report

A 57 year old Caucasian foreman presented to Saint Vincent's Hospital (#93768-0) for the relief of dysuria accompanied by nocturia and frequency of four week's duration. The diagnosis of chronic lymphatic leukemia was established one year earlier when he presented with a four month history of malaise and weight loss, and demonstrated bulky adenopathy and hepatosplenomegaly. The hemoglobin was 10.5 gms per 100 ml, the white blood cell count 1,628,000 per cu mm (almost exclusively lymphocytes), and the platelets numbered 90,000 per cubic mm. The bone marrow was heavily infiltrated by lymphocytes. He proved resistant to chlorambucil and eleven months before admission was begun on prednisone, 30 mgm daily and cyclophosphamide in gradually increasing divided daily doses from 150 mgm initially to 400 mgm two months before admission.

On presentation he was afebrile. The liver and spleen were enlarged and generalized lymphadenopathy was present. The hemoglobin was 9.5 grams per 100 ml and the white blood cell count was 138,500 with 99 per cent lymphocytes. Platelets were 90,000 per cubic mm., the urea nitrogen 11 mgm, uric acid 2.9 mgm, calcium 9.5 mgm, and phosphorus 3.3 mgm. Normal values were obtained for the prothrombin time, partial thromboplastin time, thrombin time and bleeding time. The urine was sterile, and the sediment consisted of 10-30 red blood cells and 0-1 white blood cell per high power field.

Microscopic hematuria and bladder symptoms persisted, and during the second week gross hematuria with the passage of clots ensued. During this period the cyclophosphamide had been tapered and discontinued. An intravenous pyelogram demonstrated bilateral dilatation of the renal calyces and infundibula which decompressed following evacuation of a large blood clot from the bladder. Cystoscopy showed the bladder to be filled with clots, and tumor was suspected.

Three days later two units of packed red blood cells were given to maintain the hemoglobin between 9 and 10 grams per 100 ml. Five days later repeat cystoscopy demonstrated diffuse hemorrhage. Numerous bleeding sites were fulgurated, and multiple biopsies were taken. These later showed chronic active cystitis with ulceration and no evidence of leukemic infiltration.

The urinary hemorrhage continued requiring further support with two additional units of packed red cells. On the seventeenth day of hemorrhage a repeat intravenous pyelogram showed no abnormality, and cystoscopy again showed multiple hemorrhagic areas. The urine appearing at each ureterovesical junction was clear. On the twenty-second day the intravenous pyelogram was again normal and the cystoscopic findings unchanged.

On the twenty-fifth day therapy was begun with epsilon-aminocaproic acid, one gram by mouth every six hours. The urine was only faintly pink on the next day. Three days later it was clear and all bladder symptoms ceased. Epsilon-aminocaproic was discontinued after ten days of therapy.

Numerous urine cultures remained negative, and at no time was there azotemia. During the period of hemorrhage and therapy the platelet count varied irregularly between 21,000 and 70,000 per cubic mm. and demonstrated no consistent change with each administration.

Discussion

Epsilon-aminocaproic acid (EACA) is an inhibitor of fibrinolysis, the process by which fibrin clots are dissolved.¹² Fibrinolysis has a vital physiologic role in the diseased or injured person serving as the major mechanism for dissolution of fibrin deposits resulting from the hemostatic process.¹³⁻¹⁵ The digestion of a fibrin clot is achieved by plasmin, a proteolytic enzyme closely related to trypsin. Plasmin is produced by the activation of the widely distributed precursor globulin, plasminogen. It is this activation of plasminogen which is inhibited by EACA.¹³

The capability of urine to dissolve a fibrin clot led to the discovery and purification of a urinary plasminogen activator termed urokinase.^{16,17} It is thought that this substance is not an idle excretory product¹⁴ but is produced by the kidney and serves to provide the potential for resolving fibrin deposits in urinary channels.¹⁶⁻¹⁸

Sherry proposes that significant quantities of plasminogen are incorporated into every fibrin clot and that fibrinolytic activity is directly related to plasminogen activator content.¹⁴ Therefore, simply the presence of plasminogen activator urokinase would be sufficient to initiate lysis of a fibrin clot such as may deposit in the urinary collecting systems. This hypothesis is consistent with the observation that urine applied to standard fibrin plates failed to produce lysis if the adhering plasminogen was destroyed.¹⁶

It is thought that in certain pathologic conditions, such as in hemophilia or following urinary tract trauma, the urokinase-initiated fibrinolysis may impair appropriate hemostasis by solubilizing fibrin clots prematurely.¹⁸ This conclusion led to clinical trials with EACA in urinary tract hemorrhage from various causes. EACA seemed especially appropriate since it is known to be excreted by the healthy kidney largely unchanged within six hours of oral administration and to produce active inhibition of urokinase. Moreover EACA is concentrated in the urine to a level 50 to 100 times that of the plasma.¹⁹

Clinical studies, mainly in hemophiliac patients with refractory hematuria²⁰⁻²³ and in patients following prostatectomy^{18,24-27} have consistently demonstrated decreased urinary blood loss with the oral or parenteral administration of EACA. One dramatic study in a hemophiliac demonstrated cessation of massive hematuria coincident with a ten-fold decrease in urinary urokinase activity following oral EACA.²⁸ Another study showed that EACA did not increase the plasma titer of antihemophiliac globulin nor significantly reduce the frequency of non-urinary tract bleeding.²⁹ Trasylol, which shares with EACA the property of inhibiting plasminogen activation, proved ineffective in limiting post-operative hematuria probably because it appeared in the urine only in trace amounts.²⁴

McNicol et. al. have produced full inhibition of urokinase by the administration of eight grams of EACA daily in divided doses or by continuous intravenous infusion.¹⁹ Investigators employing higher doses in the range of 300 mgm per Kg per day have witnessed renal colic and ureteral obstruction by clotted blood in up to 30 per cent of hemophiliac patients with hematuria.^{19-22,30} A few limited studies would suggest that lower doses of EACA are safer and still effective.^{23,28} On rare occasion such intrarenal clot formation has also attended plasma therapy of hemophiliac hematuria.³⁰ This complication has often been transient or remediable by endoscopy;^{21,31} it may be lethal, however, and contraindicate the use of EACA in this setting.³² Possibly the safest and most effective treatment of hematuria in hemophiliacs will prove to be the simultaneous administration of fresh frozen plasma (or concentrate) and EACA.²⁰

Intravascular thrombosis attributable to EACA is uncommon.^{12,33} However, the use of EACA in situations with closed-space bleeding, such as hemopericardium, may result in failure of clot lysis and is probably contraindicated.³⁴ EACA is also hazardous in patients with disseminated intravascular coagulation in whom inhibition of fibrinolysis theoretically could result in widespread thrombosis.¹² Other reported adverse effects of EACA include skin rash,¹² hypotension, nausea, diarrhea,³⁵ diffuse glomerular capillary thrombosis,³⁶ and possibly hyperkalemia in patients with poor renal function.³⁷

The administration of EACA to our patient was accompanied by prompt cessation of bladder symptoms and hemorrhage. EACA was employed unsuccessfully in a similar context once before, but details were not presented.³⁸ It appears that the use of EACA in this patient did indeed promote blad-

der hemostatis and obviated the necessity for a surgical diversionary procedure.

It is established that products of cyclophosphamide metabolism excreted by the kidneys are directly toxic to the bladder and cause the complication of sterile hemorrhagic cystitis.³⁹ In our patient the hematuria once induced may have been aggravated by thrombocytopenia. The majority of patients with cyclophosphamide-induced hemorrhagic cystitis will respond to hydration and cessation of the cyclophosphamide. When the hemorrhage is refractory, however, judicious use of EACA may be indicated.

Summary

A case of refractory bladder hemorrhage attributed to prolonged cyclophosphamide administration which responded dramatically to oral epsilon aminocaproic acid is presented.

Generic and Trade Names of Drugs

Cyclophosphamide—CYTOXAN

Epsilon-aminocaproic acid—AMICAR

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A Program Of Infection Control In A Small General Hospital

George H. Dickinson, M.D.

The following words are written to delineate a workable program for infection control in the small general hospital, the type of institution, where at one time or another the majority of the American people are hospitalized. The program herein described makes no pretense of being perfect or fool

proof, but has proven workable in an institution with rapid patient turnover, limited personnel and limited funds.

The initial step in instituting a program of infection control should be taken with the Medical Staff in the form of a brief expression of basic concepts and an orientation to the methods of reporting infections and compiling statutes. It must be stressed that there are certain peculiarities of the hospital environment which promote the acquisi-

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tion and spread of infection. The hospital should be looked upon as a huge reservoir of infection which is populated by a group of uniquely susceptible people. The reservoir of infection is composed of patients with recognized infections and other patients carrying an unrecognized bacterial population in or on their bodies, Employees with their bacteria, viruses, yeast, fungi and protozoans, and a vast store of linen and equipment which is used in close proximity to the patients by the employees and staff. The patient population of a general hospital is composed of singularly susceptible individuals: aged, debilitated, post-surgical, new-born, post-partum and medically ill people, all of whom may be considered to have decreased bodily resistance to infection. This decreased resistance to infection in general, is further complicated by the use of various drugs which, while urgently needed to treat one type of bacterial infestation or other disease, certainly predispose the patient to infections of a different etiology. Special emphasis must be made here on the antibiotics and corticosteroids. Drugs of this type are life-saving and necessary in modern therapy; they have inherent curative properties and yet the use of them has certain built in hazards. For these reasons much must be done to overcome the traditional feeling that reporting a hospital-acquired infection is similar to an admission of some culpability. Hospital-acquired infections do occur. They are undesirable but not shameful. It is only through meticulous reporting of infections and exhaustive analysis of all suspect hospital-acquired infections, that effective measures of control can evolve. A further break with tradition is necessary in reporting infections in order to achieve effective infection control. This is to place the emphasis on reporting etiologic agents rather than merely reporting diseases. From the standpoint of infection control, infected drainage from a minor skin lesion is just as significant as a meningitis or pneumonia.

The orientation of the Medical Staff can be accomplished by the Infection Control Officer by brief discussions at Staff and Division Meetings. Additional familiarity with the program can be achieved by distributing copies of statistics at regular intervals. Whenever the opportunity presents itself, the Infection Control Officer should emphasize that there will be *no* interference with the private physician in the management of his patient, even to the extent that the ultimate decision to isolate or not to isolate a patient would be entirely with the attending physician.

It has been relatively simple to obtain a pretty accurate picture of the flora and fauna within the hospital patient population. The manner by which this information is reported consists of three reports. The first, or preliminary report, is submitted to the Infection Control Officer as soon as an infection diagnosis is made. This form enables the Infection Control Officer to make inquiries concerning the case and if necessary, make recommendations to the nursing service, or to the attending physician. These recommendations, or suggestions, are always verbal. No note of any kind appears on the patient's clinical record. At the same time that the preliminary infection report is sent to the Infection Control Officer, a final infection report is placed on the patient's chart, where it remains until the patient is discharged. This report constitutes a complete infection record of the patient's stay in the hospital and shall be discussed later as the third report.

The second report, a daily list of "significant" cultures received from the Laboratory, provides current information regarding the pathogens found in the patient population of the hospital, Emergency Room patients, hospital employees, Nursing School students and out patients. This second report also contains positive serologies found by our Laboratory. In regard to bacteriologic cultures, this report contains the patient's name, patient's location in the hospital, when the culture was taken, (or out-patient), the site from which the culture was obtained and the micro organism identified. With this culture list in hand, the Infection Control Officer makes daily floor rounds of the entire hospital, conferring with head nurses and ward secretaries to be sure they are aware of the culture findings. On these daily rounds it has been found frequently that patients have been transferred to other areas of the hospital. For this reason the Infection Control Officer receives a daily list of hospital transfers to facilitate tracing the migration of patients (and their germs) throughout the hospital plant. This patient migration has become a rather commonplace occurrence since the advent of Recovery Room, Intensive Care Unit, Coronary Care Unit, etc.

The third, or Final Report, comes to the Infection Control Office when the patient is discharged from the hospital. This form constitutes a worksheet for the Infection Control Officer. On this worksheet notes are made of a patient's migration through the various divisions of the hospital, notes taken from the patient's chart, opinions of the In-

fection Control Officer regarding the possibility of it's being a hospital acquired infection and notation of any investigations made regarding the last possibility. All infections are coded using* "Standard Nomenclature" because, even with its obvious shortcomings, it lends itself to coding etiology better than do other currently employed systems. When the work on the worksheet is completed all infection diagnoses are cross-indexed by entry on three sheets, one by hospital divisions where the infection was first detected, the second by disease and the third by etiologic agent.

The Infection Control Officer, for reasons of cohesiveness, continuity and comprehensiveness, also wears three other hats. He is personal physician to the Nursing School, Director of Personnel Health and serves on the Cross Infection Committee. In the first three roles the Infection Control Officer personally conducts physical examinations on *all* hospital personnel. In regards nursing students, the Infection Control Officer acts as personal physician to all students and in this capacity either treats the student personally, or directs the treatment by referral to other staff members for specialized care. In all cases of referral it is mandatory for the consultant physician to submit a detailed written report to the Infection Control Officer, delineating investigative studies and recommended therapy. This, of course, includes positive bacterial and viral cultures, sensitivity tests and therapeutic recommendations.

The problem of infections and possible sources of infection among hospital employees presents a more complex problem. Performing 1000 to 1200 physical examinations a year, consumes a considerable amount of time. To order extensive Laboratory work and X-ray examinations on employees would overtax the loyal personnel of these departments. With this in mind a careful selection of "routine" examinations are ordered and when indicated, additional studies are made to whatever extent necessary to establish a diagnosis. Employee cooperation in this matter has been excellent because we follow this procedure in cases of organic disease as well as in cases of possible infection.

The routine examination of *all new* employees includes a serology and throat culture, in addition to chest X-ray, complete blood count and urinalysis. All new employees in the Dietary Service also

have stool cultures. Employees in the Maternity Department have annual serologies and throat cultures. The reason for the serologies is self evident, as is that of throat and stool cultures. The information gleaned from these examinations likewise needs no discussion. The complete blood count has assumed a position of tremendous significance in the concept of infection control. An elevated total WBC indicates a need for bacterial and viral cultures from a site to be determined by careful history-taking and physical examination. In these cases an increase in eosinophiles, in the absence of frank allergic symptoms, has been used as presumptive evidence of parasitic infections. With the entrance into the labor market of individuals from tropical and semi-tropical areas of the world, eosinophilia has assumed a paramount importance. Examination of stools for parasites is asked for immediately. In the past 3 years such an examination has failed to reveal parasites or ova in only 2 cases of eosinophilia. Frequently, in employees with eosinophilia with allergic symptoms, stool examinations for ova and parasites are ordered (especially if the employee has spent time in a tropical climate) but, in these employees, the detection of parasites has been infrequent.

On the basis of annual physical examinations, with previously described Laboratory and X-ray examinations, a great many contributions to the hospital "reservoir of infection" must be overlooked. For this reason we have recommended a "Back to Work" form similar to that used commonly in industry, but with the exception that our form includes headings such as "Date of Culture"—"Site from which culture was taken"—"Bacteria found on culture"—"Antibiotic administered"—and "Antibiotic sensitivity". This information tells us not only what etiologic agent caused the employee illness, but also what possible secondary infections we might anticipate in the "post-antibiotic" patient-employee.

The Infection Control Officer, with the close cooperation of the Director of the Laboratory, has worked out a schedule of routine culturing of all areas in the hospital plant. This culturing is done by use of the Rodak culture plate, where admittedly no attempt at bacteriological identification or determination of pathogenicity is made, except in special cases. A growth of more than 10 colonies per sq cm on the plate is considered cause for the Infection Control Officer to send an inter-departmental note to the Housekeeping Department. A growth of 20 or more colonies per sq cm on the plate, calls

* Since this writing, we have now changed our coding system to "Septematized Nomenclature of Pathology" which, we believe, eliminates most of the deficiencies mentioned above.

for emergency measures to be discussed later. It must be emphasized that the culturing schedule is carried out routinely without regard to when the areas of the hospital had been cleaned. There is one exception to this routine culturing. All our newborn nurseries are cultured after cleaning, before any infants are admitted.

Accompanied by representatives from Nursing Service, Housekeeping, Administration, Maintenance and Engineering, the Infection Control Officer makes a detailed monthly inspection of the hospital plant. Notes are made of all deficiencies found, along with recommendations for the correction of the same. This requires that the Infection Control Officer have a knowledge ranging from General Medicine and Surgery to building materials. He must also be ready and willing to listen and learn about hospital equipment, engineering, modern housekeeping techniques, nursing techniques, public relations and something of his hospital's financial resources. A written report is submitted to Administration on each monthly tour of inspection. It is on these tours of inspection that the Infection Control Officer may find special conditions which require the inauguration of emergency measures regarding culturing or housekeeping techniques.

Such a program, to have meaning and purpose, must have some goal other than that of fact finding. The only meaningful goal must be to prevent spread of infection within the hospital community—both patients and employees. To achieve this goal something must be done with this data. This is what we have done:

As previously mentioned, considerable effort has been made to sell the concept of infection control realistically. To make hospital personnel and staff aware of micro organisms rather than disease diagnoses. To this end, there has been a complete revision of isolation regulations and technique, based on etiology and antibiotic sensitivity due to pneumococcus and streptococcus, if properly treated, may be off isolation in the same length of time it takes to grow out and identify a bacteriologic culture. When the Infection Control Officer receives the final infection reports all infections are cross-indexed as to location in the hospital, to disease diagnosis and to etiologic agent. Careful examination of the cross-indexed statistics will give much assistance in running down suspect hospital-acquired infections. When such a suspect infection is encountered, much helpful information may be obtained from typing of coagulase positive Staph

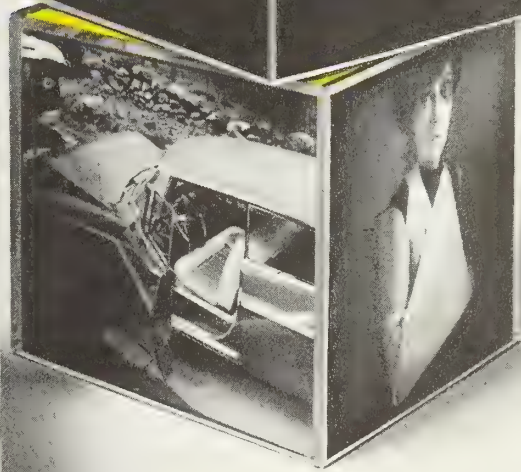
cultures and Klebsiella typing. Frequent informal conferences with O.R. Supervisors, individual physicians and directors of other hospital departments have given the information necessary to establish diagnosis of a "hospital-acquired" infection and in most cases will produce a means to prevent a repetition if, in fact, one does exist.

To widen the scope of infection control the "Cross Infection Committee" which had previously been composed totally of M.D.'s from the Active Staff, has been enlarged to include representatives from Nursing, Housekeeping and Administration. This expanded committee has undertaken a complete review of all sterilizing and disinfecting techniques employed in all areas of the hospital. They have also reviewed all the materials and techniques used by the Housekeeping Department. These reviews have included a study of the efficiency of all disinfectants and cleansing chemicals used. In this matter the U.S. Department of Agriculture has been a great help.

The Infection Control Officer, with close cooperation of the Local Health Department, has instituted a system to facilitate the reporting of in-hospital infections to the Health Department. Nursing Service has allowed Ward Secretaries to maintain a supply of the necessary report forms, which they make available to the attending physician for signature when a reportable disease is diagnosed. The Infection Control Officer is in daily communication with the secretary on every hospital division to alert her to the necessity of reporting to the Health Department. Ward Secretaries have also been provided with two lists for reference: one list consists of infection diagnoses to be reported to the hospital Infection Control Officer; the other list consists of diseases reportable by law to the Health Department. In the case of positive serologies on hospital patients, when confirmed by the State Laboratory, the Infection Control Officer notifies the attending physician on a brief form.

In all cases of infection, possible infection, or potential infection, the Infection Control Officer urges culturing and antibiotic sensitivity testing. The reasons for this are obvious, but there are a few less obvious complications. The surgeon who removes the acute appendix or gall bladder and closes with a drain, may anticipate some contamination of the drainage tract with the micro organism which caused the original infection, but if no culture is taken at the time of surgery there can be no comparison with the culture taken from the drainage tract some days later. Another reason for

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culturing and *frequent* culturing of sputum and exudate, is the *change* in flora so frequently observed with extensive antibiotic therapy. Such a change in flora constitutes a "hospital-acquired" infection, even though it may be totally unpreventable as a by-product of necessary antibiotic therapy.

Another important function of the Infection Control Officer is his contribution to the format of employee orientation and in-service training programs. This contribution requires an awareness of the equipment available in the hospital and the existing techniques. He must then be able to contribute information to a heterogeneous group of hospital employees, commensurate with their education and learning capacity. An important consideration must be to make non-professional personnel aware of infection potential, without paralyzing them with a fear of infection. This training must be directed not only toward preventing infection hazards to patients, but also toward protecting themselves from acquiring infections.

The Infection Control Officer also must take an active role in developing and revising procedures for isolation and reverse isolation technique in an advisory capacity with the directors of the nursing services. Here again we have employed the concept of emphasis on etiologic agents rather than diseases based on the characteristic response to accepted therapy.

From time to time a situation arises which requires the instituting of emergency measures. This may arise out of the monthly hospital inspections, verbal communication with anyone working in the hospital, culture findings on patients or employees, or the Rodak colony count taken in the routine culturing program. When such an emergency arises, the Infection Control Officer orders additional cultures, with as complete a bacterial identification as possible. There then may follow a "crash cleaning" procedure, which has been worked out with the Housekeeping Department. This "crash cleaning" simply involves and inch by inch cleaning and disinfecting of each wall, floor, ceiling and all equipment in a given area, with special consideration of the contaminating organisms. This cleaning is followed by another set of cultures. The "crash cleaning" may require closing small units of the hospital and even transferring patients out of a unit to facilitate cleaning.

Emergencies may require cultures from different sites, taken from employees and attending staff. Positive pathogenic cultures of significance may re-

quire a change of daily work, the transfer of an employee to a different division of the hospital, or absence from work. In all cases it requires immediate therapy. Whenever possible all possible consideration is given the physician and employee to avoid undue hardship to the individual, but in no case can sentimentality or friendship dictate action which is detrimental to the entire hospital community.

The program of Infection Control herein outlined is working. It is working only because of the excellent cooperation of all parties involved. Of extreme importance and significance, is the understanding of the Hospital Administration without whose cooperation and suggestions none of this would be possible. The attitude of the Infection Control Officer is also very important. He must respect his fellow workers and in turn he must enjoy their respect. Dictatorial and punitive attitudes have no place in a program of Infection Control.

There are several problems which have not been solved to date. There seems to be considerable question concerning what to do about infected cases entering the Emergency Room. The traffic through the Emergency Room at night does not allow adequate housekeeping between cases. Cultures taken of the Emergency Room patients seem to have little significance to the hospital by the time bacteriological identification is made and the patient has already gone home.

With all the impressive looking equipment housed in the areas where very ill patients are concentrated, such as the Recovery Room, X-ray, ICU and CCU, it is very hard to maintain housekeeping to the degree acceptable to the Infection Control Officer. Non-professional employees are afraid of the equipment and try to get away from the critically ill patient as soon as possible, without disturbing the patient. Inasmuch as this attitude is founded on common sense and altruism it has been difficult to cope with.

Some problems have been encountered with anesthesia and inhalation therapy equipment which have been solved at least partially by the use of gas sterilization, but we have found that the dismantling and cleaning of this equipment prior to gas sterilization is excessively time consuming.

The financial restrictions placed on Administration leaves much to be desired in the physical set up of the hospital plant, but a vigorous Administration has already made great progress.

Surgical Correction Of Congenital Coronary Defects. II. Coronary Artery-Cardiac Chamber Fistulas.

John A. Ogden, M.D.

Within the past few years increasing attention has been directed toward the diagnosis and surgical management of congenital lesions of the coronary arteries. One of the more frequently encountered lesions is a communication between the coronary arterial system and a cardiac chamber. A review of the current cases and 231 previously reported cases was undertaken to analyze anatomical and surgical aspects of the lesion.¹

Case Material

Thirty-one cases were found in the current review, representing the largest series available for study. These cases are summarized in Table 1. There were fifteen males and sixteen females. The chambers of termination were the coronary sinus (six cases), right atrium (four), right ventricle (thirteen), pulmonary artery (four), left atrium (three), and persistent left superior vena cava (one).

Seven cases were found at autopsy. Of the other twenty-four, nine are awaiting surgery and fifteen have had the fistula closed. Three patients died postoperatively, the most deaths reported in any series. Postoperative mortality included the following cases:

Case 4 was a 33 year old white female who had a fistula between the left circumflex artery and the coronary sinus (figure 1A). Following ligation of the fistula she experienced a myocardial infarction and arrhythmias. The latter complication continued for three months, when she suddenly died. Autopsy was unremarkable, and death was attributed to an arrhythmia. Case 3 was a 55 year old white female with a fistula from the right coronary artery to the coronary sinus (figure 1B). This case was unique in that there were two fistulas from the right coronary artery, with each one entering a discrete aneurysm of the coronary sinus. Her preoperative electrocardiogram showed an old myocardial infarction. At surgery each communication was ligated without complication. Two weeks postoperatively she had another myocardial infarction. She recovered and was asymptomatic for four years, when she died suddenly. Autopsy revealed complete thrombosis of the right coronary artery. Case 15 was a 11½ year old female with a fistula from the left coronary artery to the outflow tract of the right ventricle (figure 1C). Eight months after an uncomplicated ligation the pa-

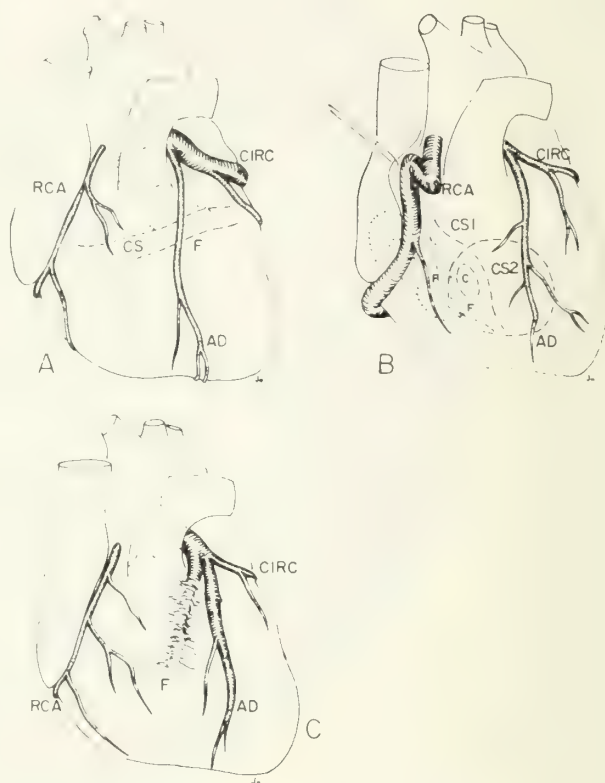


Figure 1

A. Schematic representation of case 4. A dilated left circumflex branch (CIRC) terminates, on the posterior surface, in the coronary sinus (CS). B. Schematic representation of case 3. A tortuous, dilated right coronary artery (RCA) forms two fistulas (F) into two discrete aneurysms of the coronary sinus (CS1, CS2). The two aneurysms are connected by a small aperture (C). CS1 aneurysm empties into the right atrium. C. Representation of case 15. A branch of the left anterior descending artery (AD) tunnels through the myocardium to enter the outflow tract of the right ventricle.

tient died. An autopsy was not obtained. Death was presumably related to one of the child's numerous sickle cell crises.

Discussion

The specific anatomy of these fistulas is usually unique for each patient, and necessitates adequate preoperative arteriography to delineate the struc-

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Presented at the Annual Meetings of the American College of Chest Physicians, Chicago, Illinois, November 1, 1969.

TABLE 1

SUMMARY OF THIRTY-ONE CASES OF CORONARY ARTERIAL FISTULAS FROM THE CURRENT STUDY

Case	Age*	Sex	Involved artery	Chamber of termination	SBE	CHF	Surgery	Comment
1	62	M	LCIRC	Coronary sinus	+	+	—	Found at autopsy
2	14	F	RCA (SNA)	Coronary sinus	—	+	Distal ligation	Asymptomatic seven years later
3	55	F	RCA	Coronary sinus	—	+	Distal ligation	Death four years later
4	33	F	LCIRC	Coronary sinus	—	—	Distal ligation	Death three months later
5	64	F	RCA	Coronary sinus	+	+	—	Found at autopsy
6	2	F	LCIRC	Coronary sinus	—	—	Planned	—
7	7	M	LCIRC (SNA)	RA, type 2	—	—	Distal ligation	Asymptomatic four years later
8	40	F	RCA (SNA)	RA, type 2	—	+	Planned	—
9	35	F	RCA	RA, type 1	—	+	Planned	—
10	7	F	RCA (SNA)	RA, type 2	—	—	Distal ligation	Asymptomatic two years later
11	20	F	LADCA	RV-P, type 3	—	—	Distal ligation	Asymptomatic three years later
12	3	M	RCA (Post Desc)	RV-P, type 2	—	—	Distal ligation	Asymptomatic three years later
13	4	M	RCA	RV-P, type 1	—	+	Proximal and distal ligation	Asymptomatic three years later
14	13	M	RCA	RV-P, type 1	—	—	Proximal and distal ligation	Asymptomatic three years later
15	18m	F	LADCA	RV-P, type 3	—	—	Distal ligation	Death eight months later, sickle cell disease
16	21	M	RCA/LADCA	RV-P, type 2	+	—	Distal ligation	Asymptomatic four years later
17	38	M	RCA	RV-P, type 2	—	—	Closure through arteriotomy	Asymptomatic four years later
18	8	M	RCA/LCIRC	RV-P, type 1	—	—	Planned	—
19	69	M	LADCA	RV-P, type 2	—	—	—	Found at autopsy
20	10m	F	LADCA	RV-S, type 3	—	+	Planned	—
21	2m	F	RCA/LADCA	RV-S, type 2	—	+	—	Found at autopsy
22	21	M	RCA	RV-I, type 3	—	—	Distal ligation	Fistula following ventriculotomy/asymptomatic two years later
23	15	M	RCA	RV-I, type 3	—	—	Planned	Fistula following ventriculotomy
24	7	F	LADCA	PA-P, type 1	—	—	Planned	—
25	26	M	RCA/LADCA	PA-P, type 2	—	+	Distal ligation	Asymptomatic nine years later
26	40	M	RCA	PA-P, type 3	—	—	Planned	—
27	3	F	RCA	PA-S, type 1	—	+	—	Found at autopsy
28	46	M	LCIRC	Left atrium	+	+	—	Found at autopsy
29	7	F	LCIRC	Left atrium	—	—	Planned	—
30	66	M	RCA	Left atrium	—	—	—	Found at autopsy
31	47	F	LCIRC	Left superior vena cava	+	+	Distal ligation	Asymptomatic six years later

Key: * age in years, except those indicated by m (months); LCIRC, left circumflex artery; RCA, right coronary artery; LADCA, left anterior descending artery; SNA, sinus node branch; RA, right atrium; RV-P, right ventricle, no other cardiac defects; RV-S, right ventricle, associated cardiac defects; PA-P, Pulmonary artery, no other cardiac defects; PA-S, pulmonary artery, associated cardiac defects; SBE, subacute endocarditis; CHF, congestive heart failure.

tures involved. However, despite the individual variations, there are relatively constant areas in each cardiac chamber where the fistula terminates.

Fistulas previously classified as terminating in the right atrium have included many that are only indirectly involved with that structure (Table 2). A breakdown shows that two cases terminated in the superior vena cava, eleven in the coronary veins, and twenty-one in the coronary sinus. Only forty-five of the eighty "right atrial" cases actually terminated in that chamber. These can be grouped

into three relatively constant types (figure 2). Type 1 involves an atrial branch of the right coronary artery that communicates with the atrial appendage or along the anterior atrial surface. Type 2 involves the sinus node artery, which may arise from either the right or left coronary artery, and which terminates in the right atrium near the entrance of the superior vena cava. In type 3 atrial branches of either the right or left coronary artery terminate along the posterior atrial surface.

Fistulas to the right ventricle also have character-

TABLE 2

ANALYSIS OF FISTULAS BY SITE OF TERMINATION

Superior vena cava	2
Coronary veins	11
Coronary sinus	21
Right atrium	46*
Type 1 (anterior atrium)	13
Type 2 (sinus node region)	22
Type 3 (posterior atrium)	6
Right ventricle	102*
Type 1 (inflow)	30
Type 2 (apex)	29
Type 3 (outflow)	38
Pulmonary artery	45*
Type 1 (single vessel)	22
Type 2 (retiform vessel)	15
Type 3 (accessory artery)	11
Left atrium	12
Left ventricle	7

* This total does not coincide with the subgrouping since many cases did not give sufficient data to permit subgrouping.

istic sites of communication (figure 3). The right coronary artery may communicate by a side-to-side fistula with the inflow tract of the ventricle. Second, branches from either the right or left anterior descending artery may communicate with the ventricular apex. Third, branches from the right or left anterior descending artery may communicate with the infundibular region (outflow tract). About 25% of right ventricular fistulas arise in hearts with pulmonary valvular atresia. These secondary coronary fistulas will be discussed in detail in a subsequent publication.²

There are three main types of fistulas to the pulmonary artery (figure 4), excluding the mature phase of anomalous origin of the left coronary artery from the pulmonary artery. In the first type a single branch arises from either the left or right artery and enters the pulmonary artery just above the valve. In the second type multiple small vessels from both coronary arteries unite to form a plexus over the base of the pulmonary artery. One or more small branches arise from this plexus and enter the pulmonary artery. In the third type an "accessory" coronary artery communicates with the pulmonary artery and has connecting branches to the right and left anterior descending arteries.

Fistulas to the left atrium usually involve a branch of the circumflex artery terminating in the left atrial appendage. Fistulas to the left ventricle are rare and usually involve several small communications.

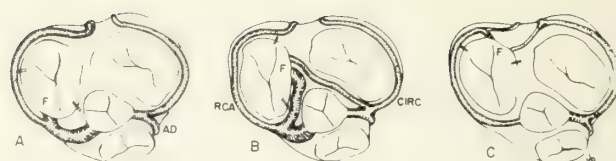


Figure 2

Right atrial fistulas. A. Type 1—the fistula enters the anterior right atrium or atrial appendage and involves only the right coronary artery. B. Type 2—the fistula involves the sinus node artery, which may arise from either the right or left coronary artery, and communicates with the right atrium near the entrance of the superior vena cava. C. Type 3—the fistula enters the posterior surface of the right atrium and may involve branches from either coronary artery.

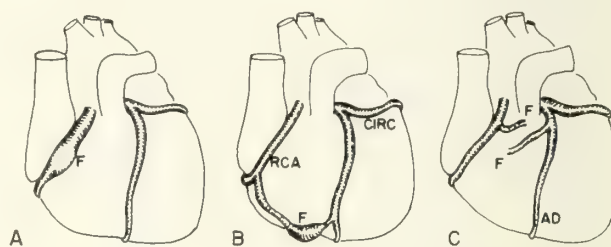


Figure 3

Right ventricular fistulas. A. Type 1—a side-to-side fistula from the right coronary artery to the inflow tract of the right ventricle. Such a fistula may occur anywhere along the atrio-ventricular groove. B. Type 2—a branch of either the right or left anterior descending arteries may enter the apex. C. Type 3—a branch of either the right or left anterior descending artery may enter the outflow tract.

Surgical repair of the asymptomatic patient is still the subject of unjustified controversy. The main indications for surgery are the potential complications that may arise—an incidence of congestive failure approaching 20%, an incidence of subacute bacterial endocarditis approaching 10%, ischemia, infarction, and rupture of the aneurysm.¹ Therefore, elective repair should be undertaken following roentgenographic demonstration of the fistula.

Since the first repair was performed in 1947,¹ 126 patients have had operative correction of their fistulas. Because of the diversity of the anatomy, no standard surgical technique has evolved.

The primary consideration should be adequate exposure of the site of termination of the artery into the involved chamber. Following this, the fistula should be temporarily ligated to test for myocardial ischemia. Several surgeons have reported isolated cases of ischemia during ligation,

while Sakakibara felt that localized temporary ischemia occurred in every case.¹

Ligation of the fistula was performed in 111 cases, with the usual procedure being ligation and transection at the site of fistula termination. There are several reported cases in which the involved artery was also ligated at the proximal end, thereby creating a single coronary arterial supply to the heart from the uninvolved artery.

Other methods of operative repair have been used less frequently. In eight cases the artery was opened over the site of the fistula and the abnormal communication closed from within the arterial lumen. Cooley¹ employed interlocking mattress sutures behind the artery, but through the fistula. Both techniques were used in side-to-side fistulas and were intended to maintain arterial patency.

In six cases the fistulas were repaired from within the involved chamber while the patient was on cardiopulmonary bypass. This procedure should probably be used only for complicated fistulas and those located in anatomically inaccessible areas (particularly the posterior surface). The bypass pump should be kept available in all cases, since unexpected anatomic variations may be encountered.

There have been only three previously reported postoperative deaths. Two were in infants less than two years of age, both of whom had a patent ductus arteriosus and resultant pulmonary hypertension. The third was a patient who underwent ligation and died in the immediate postoperative period of a massive hemopericardium. The death in the patient with sickle cell disease in the current series was probably not related to the surgery. The other two patients are similar in that they were both females in the fourth and fifth decades, had posteriorly located fistulas that were difficult technically to repair, had postoperative myocardial infarctions, and died relatively late in the postoperative period.

Summary

Each chamber of termination has relatively constant sites of communication with the involved artery. The surgical approach must be individualized to the particular anatomy present. Most fistulas involve the terminal portion of the main artery, or a large branch, and are best ligated and transected at the site of termination. However, side-to-side fistulas, such as those to the right ventricular inflow tract, should be closed by arteriotomy or posteriorly placed mattress sutures. Complicated fistulas should be explored and closed using cardiopulmonary bypass.

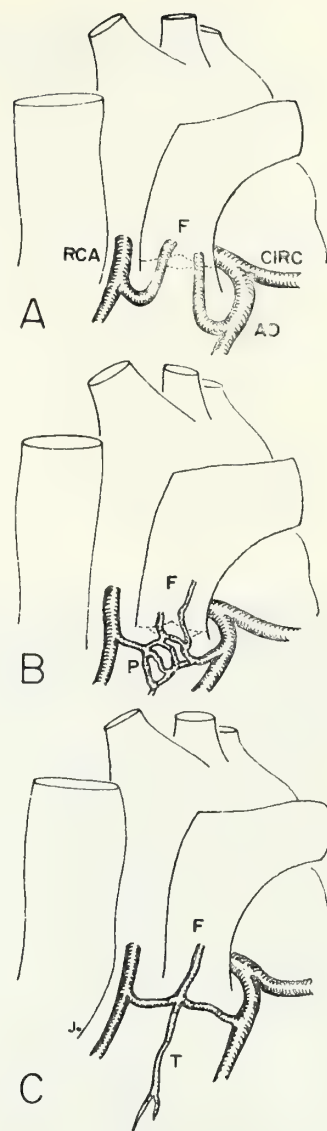


Figure 4

Pulmonary artery fistulas. A. Type 1—a single branch from either the right or anterior descending artery. B. Type 2—branches from the right and anterior descending arteries may enter an arterial plexus (P). Small branches arise from this to communicate with the pulmonary artery. C. Type 3—a “third” or “accessory” artery (T) lies over the right ventricular outflow tract and communicates with the pulmonary artery. Branches from either the right or anterior descending arteries (or both) communicate with this vessel.

Acknowledgments

The author would like to extend an appreciation to the many Connecticut physicians who contributed cases to the studies described in these two publications, and particularly to Drs. A. V. N. Goodyer, H. C. Stansel, and W. W. L. Glenn of Yale University and Dr. C. E. McLean of Hartford Hospital.

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arterial fistulas is included in the thesis and may be obtained from the author).

2. Ogden, J. A. Secondary coronary arterial fistulas. In preparation.

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Connecticut Medicine

Editorials

The Problem Of Sudden Death

Primary prevention of coronary heart disease is obviously important in ultimately reducing mortality from this greatest threat to longevity. However, we are no further today in coping with this aspect than we were 20 years ago. What could be significant is if we could prevent those factors which precipitate sudden death which occurs mostly in patients with coronary heart disease and which Lown considers to be due to "an accident within the heart."¹ Autopsy studies offer no reasonable explanation for the electrical accident. However, since there is often very little evidence of extensive damage to the heart itself, such patients might recover if the electrical disturbances were prevented or controlled.

Both coronary care unit experience and ECG monitoring of symptomatic patients who go into cardiac arrest indicate that it is ventricular fibrillation that is the mechanism of sudden death. A number of studies also indicate a higher incidence of sudden death in patients who have ventricular ectopic beats of which three types have been identified as paroxysms of ventricular tachycardia, couplets, and early cycle extrasystoles. It was significant that two-thirds of the major arrhythmias recorded in hospital patients occurred only while the patient was asleep. Doubtless they occurred during dreaming and drugs to reduce the hallucinatory phase of dreaming might reduce these harbingers of death.²

It is important to note that the mere presence of V.P.B. probably has little prognostic value.

Up to 80 percent of all patients with C.H.D. would show some ectopic activity if monitored for an extended period of time. In addition V.P.B. occur but do not appear to affect longevity in most people over 60 years old, in many young vigorous people and even in some patients with C.H.D. What makes a V.P.B. a harbinger of major derangement in rhythm is the existence of severe ischemia and significant stress, i.e., the circumstances of its development. Stress could accentuate the ischemia in C.H.D. and lead to ectopic beating for in such a circumstance we have anoxia, an existing agent combined with norepinephrine the necessary combination for producing ectopic rhythms.³ This is the reason why passive monitoring may not reveal major grades of arrhythmia, and only after exercise will abnormal activity be revealed in as many as 18 percent.

In order to classify subjects with C.H.D. who are susceptible to V.F., Lown¹ suggested two separate categories: patients with acute myocardial infarction (MI) and patients with C.H.D. who develop symptoms but no evidence of M.I. With those who have M.I. the patients delay in seeking help seems to be the biggest problem. For if they were in the hospital the safety of lidocaine and its remarkable ability to prevent fatal arrhythmia in the CCU already justifies its administration by paramedical personnel at the very onset of M.I.

Important in forensic medicine is the lack of a true relation of sudden death to strenuous physical activity or even to work itself. Thus only 2-5 percent of all cases of sudden death

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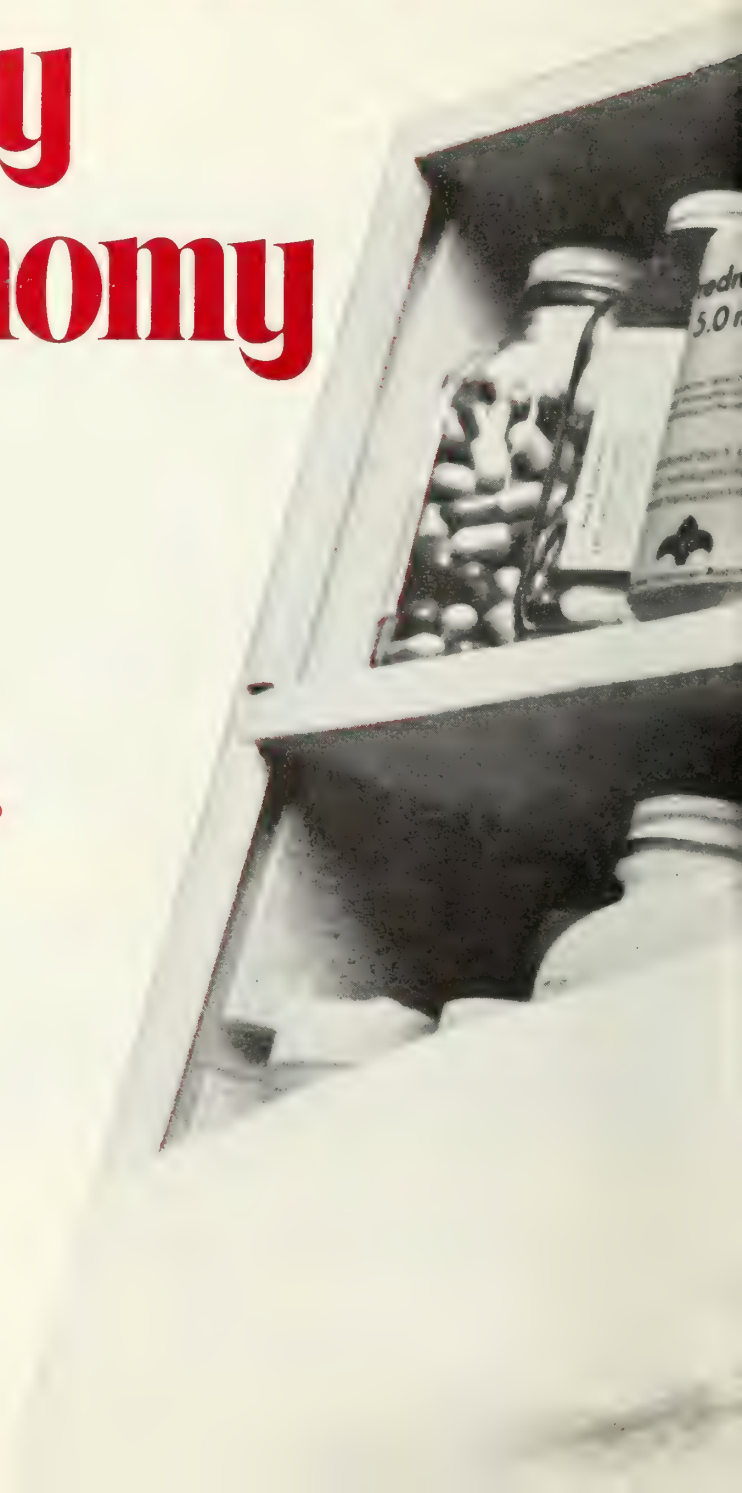
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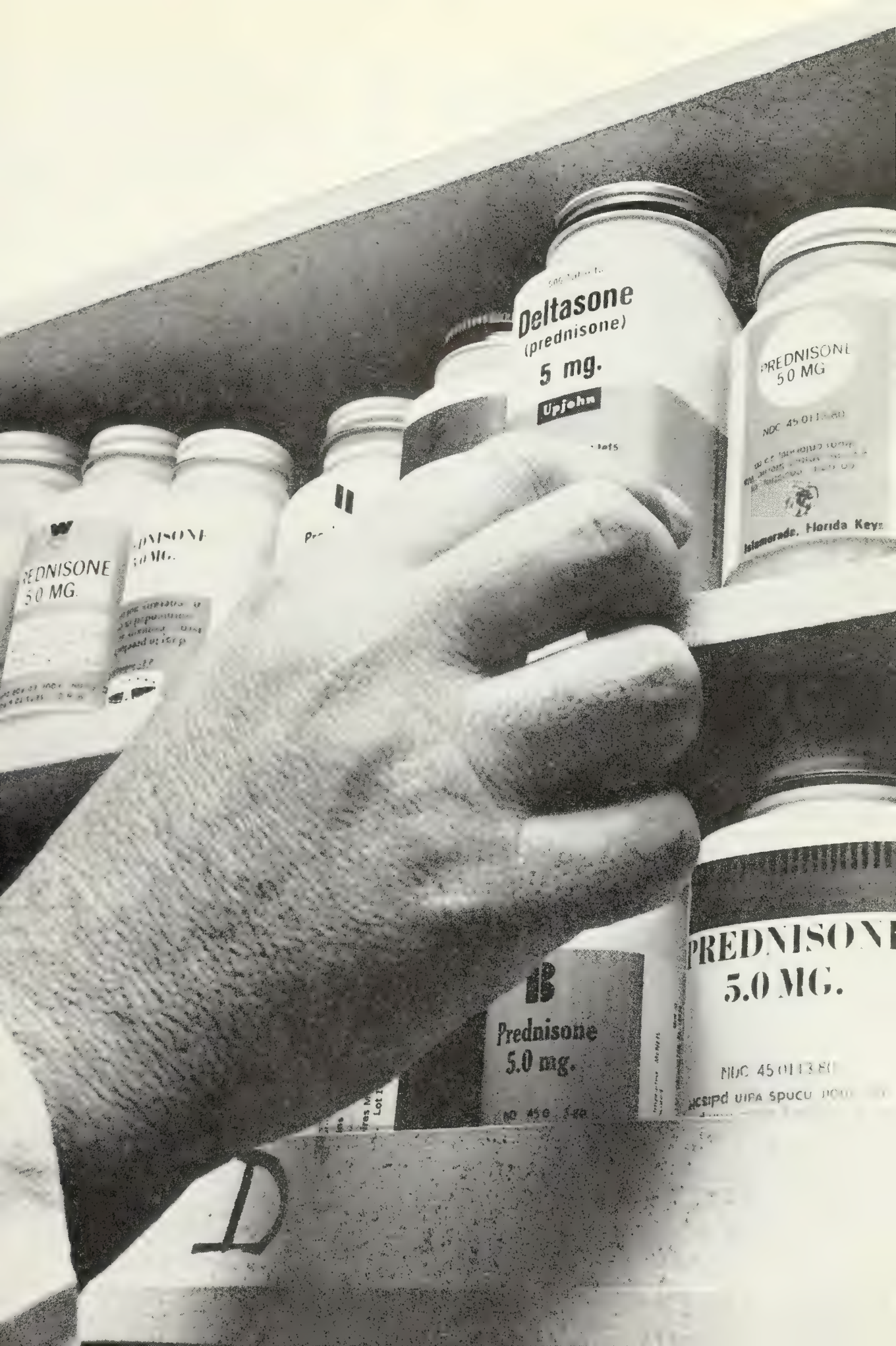
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Contraindications: As for all other corticoids. *Considered Absolute*—herpes simplex keratitis, acute psychoses and latent, healed or active tuberculosis. May be lifesaving in certain cases of pulmonary or meningeal tuberculosis, but should be used only in conjunction with adequate and effective antituberculous therapy to which causative organisms are shown to be sensitive. *Considered Relative*—active or latent peptic ulcer, Cushing's syndrome, diverticulitis, fresh intestinal anastomoses, osteoporosis, renal insufficiency, thromboembolic tendencies, psychotic tendencies, diabetes mellitus, hypertension, local or systemic infections including vaccinia, varicella and other exanthematous diseases, and fungal infections, and, pregnancy particularly during the first trimester because of observation of fetal anomalies in experimental animals. If necessary to give corticosteroids during pregnancy, watch newborn infants closely for signs of hypoadrenalism and institute appropriate therapy if signs appear.

If corticoids are used in the above conditions, weigh risks against benefits.

Precautions: Deltasone should be given only with full knowledge of characteristic activity of and varied responses to corticoids. Because of inhibiting effect on fibroplasia, corticoids may mask signs of and enhance spread of infection; hence, watch patients closely, and if intercurrent infection occurs, control with appropriate antibacterial measures. If possible, avoid abrupt cessation of corticosteroid therapy because of the danger of superimposing adrenocortical insufficiency on the infectious process. Prolonged hormone therapy usually causes a reduction in the activity and size of the adrenal cortex. When discontinuing therapy, relative adrenocortical insufficiency may be avoided by gradual reduction of dose. However, a potentially critical degree of insufficiency may persist asymptotically for some time even after gradual discontinuation of adrenocortical steroids. Therefore, if a patient is subjected to significant stress, such as surgery, trauma, or severe illness while being treated, or within one year (occasionally up to two years) after treatment has been terminated, hormone therapy should be augmented or reinstituted and continued for the duration of the stress and immediately following it. Since mineralocorticoid secretion may be impaired, salt and/or desoxycorticosterone should be administered conjunctively. It is preferable to use a soluble hormone preparation in the immediate preoperative and postoperative periods.

Although unlikely with Deltasone, average and large doses of corticosteroids can cause elevation of blood pressure, salt and water retention and increased potassium and calcium excretion. Dietary salt restriction and potassium supplementation may be necessary. Glucocorticoid steroids may aggravate diabetes mellitus so that higher insulin dosage may become necessary or manifestations of latent diabetes mellitus may be precipitated. Corticosteroids may aggravate myasthenic symptoms in myasthenia gravis and should be given with proper precautions.

Muscle weakness, in some instances, attributed to hypopotassemia, has been reported following prolonged systemically administered corticoids. Excessive potassium loss, like excessive sodium retention, is not likely to be induced with effective maintenance

doses of Deltasone (prednisone), however, keep this effect in mind and perform periodic serum potassium determinations in patients on prolonged corticoid therapy. Muscle weakness occurring with normal serum potassium levels may be due to disturbance in muscle metabolism. Severe myopathy is associated with substantial doses of steroids for prolonged periods, and evidence indicates it occurs more frequently with 9- α -fluoro steroids. Replacement with non-fluorinated steroid has, in some instances, resulted in improvement.

Retardation of linear growth, roughly proportional to dose, has been noted in children on corticoids for six months or more. Following cessation of therapy, growth rate may be accelerated. Therefore, carefully observe growth of children on prolonged corticoid and if growth is retarded, reduce dose sufficiently to permit recovery before epiphyseal closure. Make every effort to avoid corticoids during pregnancy, since spontaneous remission of some diseases such as rheumatoid arthritis may occur. Long term corticoid therapy may evoke hyperacidity or peptic ulcer, therefore, as prophylaxis, an ulcer regimen and antacid are highly recommended. Take X-rays in peptic ulcer patients complaining of gastric distress, and, whether or not changes are noted, an ulcer regimen is recommended. Since prednisone causes less salt and water retention than many other glucocorticoids, patients should be observed closely for development of undesirable hormonal effects that are less obvious indications of steroid toxicity than edema and hypertension due to salt and water retention. Continued supervision of patients after cessation of therapy is essential, since there may be a sudden reappearance of severe disease manifestation.

Adverse Reactions: Adverse reactions associated with use of corticoids include: Cushing's syndrome, moon facies, supraclavicular fat pads, hirsutism, striae and acne; relative adrenocortical insufficiency particularly in time of stress due to trauma, surgery or severe illness; protein catabolism with negative nitrogen balance; electrolyte imbalance; alteration of glucose metabolism with aggravation of diabetes mellitus including hyperglycemia and glycosuria; osteoporosis reversible only with difficulty; spontaneous fractures; aseptic necrosis of the hip and humerus; activation and complication of peptic ulcer including perforation and hemorrhage; aggravation or masking of infection; increased blood pressure; convulsions; petechiae and purpura; menstrual irregularities including amenorrhea, spotting or prolonged bleeding; insomnia; psychic disturbances especially abnormal euphoria; nervousness; posterior subcapsular cataracts occasionally requiring extraction; increased intraocular tension; increased intracranial pressure with papilledema (pseudotumor cerebri); pancreatitis; necrotizing angitis; thinning of scalp hair; suppression of growth in children; thromboembolic complications; facial erythema; allergic skin reactions; ulcerative esophagitis; sweating; vertigo; weakness; myopathy; headache; exophthalmos. Adverse reactions are usually reversible and usually disappear when drug is discontinued.

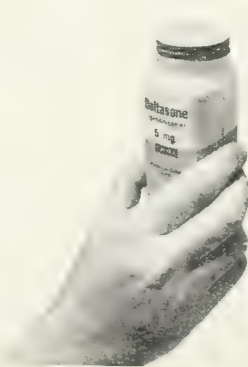
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have been found to have been preceded by vigorous physical activity⁴ and only 8-10 per cent have occurred at work. One half to three quarters of the events have taken place at home, most often in bed. Important to the public safety was the observation of Myerburg and Davis⁶ that only 4 per cent of such episodes occurred at the wheel of an auto.

The attack on decreasing the magnitude of the problem has multiple facets.⁵ Better education of the public on significant premonitory symptoms of an impending coronary attack could be one approach. For many people are unaware of the fact that chest symptoms indicative of impending or actual infarction are not so much a "pain" as a pressure tightness, burning, squeezing or other discomfort. The realization by the public of the potential significance of dull chest discomfort would greatly assist in earlier awareness of the need to call for help. This would assist in earlier hospitalization and treatment if the patients with such symptoms went directly to an emergency room rather than wait to reach a physician.

Episodes of faintness, weakness and profuse sweats are rightly viewed by the profession with concern. A single normal ECG does not provide sufficient evidence to reassure the patient unless as noted above a latent arrhythmia is not exposed by an exercise tolerance test. Crucially important ST straightening and depression must be watched for even if the T waves are upright and appear normal. In addition we must learn to regard with especial suspicion persons whose history and physical examination indicate the presence of a number of "risk" factors such as a family history of premature cardiovascular disease, or diabetes, the presence of hypertension, known abnormality of the blood cholesterol, or use of cigarettes.

It is doubtful whether better ambulance service with trained resuscitation teams may contribute much to salvage the person at risk. However, reorganization of emergency services may help so that candidates for sudden death should not have to wait after arrival before vital treatment is administered. Periodic drills of emergency room personnel in resuscitation techniques would allow use of their skills to equal the urgency of the problem.

The routine long term administration of antiarrhythmic agents to patients who have angina or have had an infarction is in need of exploration.

Unfortunately each drug presently available has also undesirable side effects, so that no agent currently at hand is ideal. If a single drug or combination of drugs could be found that could provide the measure of protection against ventricular arrhythmia, this might notably reduce the mortality from sudden death in high risk individuals. One such combination might well be an injection of atrophine and lidocaine by paramedical personnel on the first contact with such a patient.—L.H.N.

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More On Government And Water Pollution

"A river is more than an amenity, it is a treasure."—Oliver Wendell Holmes

In 1899, a law known as the Refuse Act was passed by Congress prohibiting discharge of "any refuse matter of any kind or description whatever into any waters of the United States, except under permit from the Army Corps of Engineers." There are now 40,000 industries polluting our streams but industries have neither requested permits, nor have the Army Corps of Engineers demanded them after 72 years. However, as the ecological consciousness grew in the country, the Refuse Act became a vehicle for several suits against polluting industries and in several cases in the last decade the courts ruled that the act prohibits accidental as well as continuous discharges including such diverse pollutants as oil and thermal discharges.¹ But the Corps still did not initiate any significant crack-down on polluters. This policy it must be said was probably not an effort to endorse pollution, but rather was part of the general American notion that rivers and streams were natural places to put garbage!

In the early part of 1970 Representative Henry S. Reuss (D-Wis.), chairman of the House Subcommittee on Conservation and Natural Resources took up the Refuse Act as his personal cause. He held hearings² to establish the potential usefulness of the Refuse Act in curbing water pollution and he publicly criticized the government for failure to invoke it. Reuss also publicized a portion of the act which provides that one half of any fine levied against a polluter be paid to the person or persons giving information which leads to conviction, and at the same time suggested that under a little-used legal device dating back to English common law, citizens themselves could initiate proceedings against polluting industries and thus recover one half of the fine.

The government, however, is not limited by such considerations. After some prodding by Reuss, the Corps of Engineers announced on July 1970 that it would "soon" institute a policy of full enforcement of the 1899 act based on the Corps' determination of water quality standards that would require permits of all industrial polluters. The Justice Department which is responsible for prosecuting violators of the Refuse Act issued a set of guidelines of litigation to U.S. attorneys which were a (weak interpretation of the act¹ specifically excluding action against manufacturers releasing pollution "of a continuing nature" resulting from a plants normal operations and actions against anyone discharging pollution under license from any state or local government. In effect the regulations virtually emasculated the Refuse Act.

In defending the guidelines Justice officials claimed that any stricter enforcement of the Refuse Act would interfere with provisions of the Water Pollution Control Act. This requires that any applicant for any type of federal permit for an activity that might discharge wastes into public waters must first obtain certification from the states where the discharge is to be made. Thus a conflict was created in the federal government between the Army Corps of Engineers who wanted a comprehensive permit system under the Refuse Act and the Justice Department who wanted essentially to ignore the Refuse Act and rely on more recent legislation to curb pollution, legislation which essentially relies on the states.

The administration recently announced a federal permit system to resolve this conflict. Under

these regulations the Corps will receive permit applications specifying the precise nature and amounts of the material being discharged from some 40,000 industries believed to be discharging materials into public waterways. The regulations, however, deny the corps any authority to consider water quality standards in accepting or denying the permit application. Instead, the corps must first forward the applications to the appropriate state water quality boards for certification and then the Federal Environmental Protection Agency for recertification!

Congressman Reuss told Science that the new regulations were "poorly drafted and totally ineffective" for they restrict the federal government from carrying out a truly comprehensive program to control water pollution. Reuss along with lawyers from several conservation groups believe there was no need to combine the provisions of the 1899 act with the more recent legislation. The Refuse Act of 1899 specifies no limitations on the Corps' authority to determine what constitutes "proper" amounts of discharges. Reuss and the conservation lawyers advocate a permit program based solely on the 1899 Act. Clearly introducing blocks all along the way has almost neutralized the corps from taking effective steps to purify our streams.

Environmentalists are concerned about several matters relating to the new regulations which the President announced with fanfare on December 23. In addition to leaving determination of water quality to the states, there is the question of bypassing the purpose of the Fish and Wildlife Co-ordination Act. That act specifies that any federal program that might threaten fish or wildlife must be approved by the Fish and Wildlife Bureau of the Department of the Interior. Under the new regulations fish and wildlife considerations are limited to situations where the stream is physically altered. Massive fish kills are thus now permitted!

A third item of controversy about the new permit program is the question of enforcement. The Administration is requiring applications for permits July 1971 but both the Corps and EPA lack sufficient staff to rapidly process 40,000 complicated applications. Until the processing is completed an industry cannot be prosecuted until the application is denied. If there are large delays in processing some industries will remain immune for several years during which it can continue to pollute.



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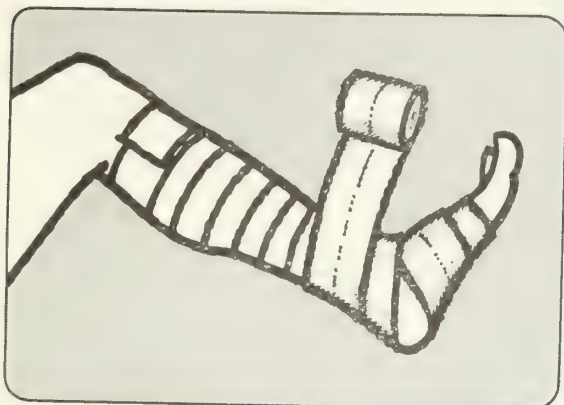
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Once an industry has obtained a permit to operate, there remains an enforcement problem. The industries themselves provide the data on the nature and quantity of their water discharge. There is no way to check on their veracity.

The pattern on how not to enforce pollution control is clear. First pass a good law (the Refuse Act of 1899) but neglect to enforce it. If a threat of enforcement arises from pressure from the public or conservationists, then pass other laws or introduce regulations that makes the "good" law unenforceable. Should the conflict thus created in the government be resolved then arrange it so that no means are made available to enforce the law in the public interest.—L.H.N.

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- "Qui Tam Actions and the 1899 Refuse Act: Citizen Lawsuits Against Polluters of the Nation's Waterways," report of the Conservation and Natural Resources Subcommittee of the Committee on Government Operations. U.S. Government Printing Office, Washington, D.C. 20402; 20 cents, Superintendent of Documents.

The Rest Dogma In Therapy Of Infectious Hepatitis

"Look at a patient lying long in bed. What a pathetic picture he makes! The blood clotting in his veins, the lime draining from his bones, the cybala stacking up in his colon, the flesh rotting from his seat, the urine leaking from his distended bladder, and the spirit evaporating from his soul."— R. A. J. Asher, The dangers of going to bed. Brit. Med. J. 2, 967, 1947.

Since the end of World War II rest has been considered essential for the treatment of infectious hepatitis (IH). Current medical opinion is that a patient should not be allowed to resume normal physical activity until liver function tests give normal results. Many physicians even now, when the rest dogma has been laid to rest, even in dealing with patients with myocardial infarction continue to be wary of letting their patients with I.H. up because of personal experience with occasional patients who continue to

worsen until they were put to bed. However, we need to remember that hepatitis is usually a self-limited disease and that "the last ointment one puts on poison ivy is always the one that cures it."

The currently accepted opinion of the efficacy of bed rest in the treatment of I.H. is based largely on uncontrolled studies purporting to demonstrate that activity adversely affects patients with this disease or in isolated cases that strenuous activity at the onset of illness worsens the disease. Then there are the physiological observations that hepatic blood flow is decreased during exercise and the "commonsense" opinion that rest is beneficial to all illness.

The study by Chalmers² liberalized the rest concept when it was demonstrated that ad Libitum ward activity accompanied by one hour rest period after meals did not prolong the illness. The findings were further substantiated by the demonstration that physical reconditioning shortly after liver function tests returned to normal levels did not cause relapse. Furthermore in a 10 year follow up study of these patients it was found that there was no superficial prevalence of chronic liver disease in any group studied. Other follow up studies of hepatitis in the military population have tended to confirm the lack of infectious hepatitis to chronic liver disease.⁴

The study by Repsher and Freebern¹ compares ad Libitum rest with strenuous physical reconditioning begun as soon as the patients symptoms permitted it. The mean serum bilirubin at the start of the vigorous exercise was 7.5 mg/100m.l. Repsher and Freebern put their jaundiced patients through an hour of calisthenics followed by a mile run each morning and many work details alternated with competitive athletics in the afternoon! Symptomatic and biochemical relapses were no more frequent than those encountered in the patients who continue to be confined in their hospital wards and mean durations of illness were the same. The severity of illness as determined by the serum bilirubin on admission, age of the patient, the degree of activity before admission and persistence of abnormal enzymes after the fall of serum bilirubin were all unrelated to treatment and duration of illness.

Chalmers² who did the first study in Korea on activity in I.H. is not so shocked as medical traditionalists are by the above results. Never-

theless he points out some qualifications that should be born in mind. The patients were assigned to treatment groups by alternation rather than by the random envelope technique. The decision to reject a patient as unqualified for the study was made with knowledge of the impending treatment group and thus subject to some bias. The outcomes of the patients withdrawn from the study for various reasons (5 per cent of each group) are not described. Qualitative effects of exercise on liver function are not presented. Then is the fact that age distribution was too narrow for reassurance that older patients might not respond differently when subjected to exercise.

Such minor defects do not reduce the dramatic implications of Repsher and Freebern's study. It is somewhat surprising that exercise did not cause a transient rise in serum bilirubin which had been observed by two other workers, neither of whom, however, noted any lasting harmful effects. There may, of course, be an occasional exception to the rule that cannot be detected by controlled trials. There may be a rare person, one out of 100 or 1,000 or 10,000 who because of some unusual constitutional or environmental factor may be harmed by exer-

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cise during the course of infectious hepatitis. The possible existence of such people is suggested by the report of unusually severe hepatitis in 5 young people who indulged in especially strenuous exercise in the first or second day of symptoms³ but their unfortunate experience is no reason to mistreat untold thousands who are kept resting long after they begin to feel well. Even the question of heightened infectivity was considered by Repsher and Freeborn as a possible consequence of the exercise regimen studied and none was found.

Scientific data more and more stack up against the value of enforced bed rest in the treatment of disease. Possibly we need more eloquence to impress those who continue to believe in tradition and personal experience rather than controlled trials.—L.H.N.

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Is Myocardial Infarction The Result Of Coronary Occlusion

In the course of examining mortality trends among middle-aged persons in Ontario, Anderson¹ and his colleagues at the University of Toronto have found evidence of a substantial rise in the male death rate from coronary thrombosis since the beginning of the century, but no evidence of any comparable rise in death rates from "cerebral thrombosis." Since no increase has occurred in death rates from ischemic cerebral vascular disease, and a large one occurred in ischemic heart disease, this seems to be something of a paradox since the general view is that the basic mechanism of death in both conditions is thrombosis within an atheromatous artery.

There are several possible explanations. One is that since 1920 there has been a localized increase in coronary artery sclerosis unaccompanied by a corresponding increase in the degree of atherosclerosis within or those leading to the brain. This seems unlikely because it was not found by Morris at the London Hospital. Fur-

thermore, atherosclerosis is a systemic disease due to metabolic and external factors such as diet which might be expected to have a general, rather than a local effect.

A second possible explanation is that there has been an increased tendency to intravascular thrombosis during the past few decades. Here again one needs to postulate a local effect and furthermore it is questionable whether such a change would have resulted in an increased incidence of myocardial infarction since the careful pathological studies of Kagan² and others have cast serious doubt on the conventional belief that myocardial infarctions or "coagulation necrosis" is typically the result of an acute coronary occlusion. These investigators have in fact demonstrated that in a large proportion of fatal cases of MI, thrombosis in a coronary artery is a sequel to, rather than the cause of myocardial infarction.³

Furthermore, it has been found that patients with a severe predisposition to intravascular thrombosis do not in fact show any corresponding predisposition to myocardial infarctions. The disappointing results of long time anti-coagulant therapy⁴ would also throw support to the idea that the incidence of MI is significantly influenced by changes in the coagulability of the blood. This argument, however, is not too convincing now that we know that anticoagulants do not prevent the platelet thrombus which is said to dominate in arterial thrombosis.

In any case, current concepts of the etiology and management of ischemic heart disease are seriously challenged⁴ and increasing attention is being paid to the possibility that factors other than a sudden reduction in coronary blood flow are also capable of inducing acute myocardial cell death.

Much of the impetus for this reappraisal of the role of acute coronary occlusion in the generation of MI has come from pathologists. Spain and Braden analyzed their findings in several hundred medico-legal autopsies where the apparent cause of death was a "coronary" attack and found that the frequency with which a fresh thrombus could be demonstrated in a coronary artery was inversely correlated with the duration of the symptoms, the more rapid the death, the less likely that a thrombus would be found. They suggested that the most reasonable explanation for this bizarre finding was that coronary thrombosis was often the result of MI rather than the

cause, and that a thrombus was unlikely to be found unless the patient had survived long enough for thrombosis to develop as a result of a vascular stasis in the damaged area.

Baroldi reached a similar conclusion after a detailed examination of the coronary vasculature in patients dying of ischemic heart disease. He found that well developed anatomic pathways were almost always present around areas of coronary stenosis and that in many cases complete occlusion of the coronary vessel had occurred without any evidence of infarction in the corresponding area of the myocardium. He suggested that the term myocardial infarction be abandoned since it implies that a cell death has resulted from a vascular occlusion and that "idiopathic coagulation necrosis" be used in its place.

Cerebrovascular disease as noted above was found to show quite a different pattern over the last few decades. Not only had male and female death rates remained approximately equal over the years, but both rates had been virtually stationary since about 1900 as had the relative contribution of thrombosis and hemorrhage. Thus whatever the factors in modern life that have led to the recent increase in cardiac mortality, they do not appear to have had a comparable effect on the mortality from cerebral thrombosis.

To explain this difference in traditional terms it would be necessary to postulate an increased tendency to either atheroma or thrombosis, or both, which affected the coronary arteries but which at the same time spared the carotids, vertebrals and intracerebral vessels. A localized effect of this nature is not inconceivable, but a direct effect on the myocardium is at least as likely, since we know from Raab, Selye, and others that a variety of chemical, hormonal and neurologic factors in animals can induce acute myocardial necrosis. Anderson believes, and with much good reason, that there is increased vulnerability of the myocardial cell to the metabolic disturbances associated with stenotic coronary arteries. As an example he suggests that in cigarette smokers nicotine or carbon monoxide might affect the viability of the myocardial cell either through a direct action on the cell membrane or indirectly through neural or hormonal mechanisms.

The study of myocardial metabolism in the human is extremely difficult, but it is to be hoped that with the increasing use of coronary cath-

eterization and the aid of appropriate animal models it will be possible to enlarge our understanding of the factors which can influence the viability of the human myocardium and to achieve an increased measure of control over the current "epidemic" of ischemic heart disease.

L.H.N.

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Genetic Betterment

On taking the Oath of Geneva the graduating physician undertakes to work in the best interest of his patient and also in the service of humanity. The first is clear and unmistakable, being derived from the Hippocratic Oath. The second is not spelled out. It could mean that we physicians must also devote our energies towards measures for the highest realization of man's potential; and in addition toward the creation of a person with the best kind of genetic equipment. This will require a new right, the right of every child to be born with a sound physical and mental constitution based on a sound genotype. This will require that parents in the future will not have the right to burden society with a malformed or a mentally incompetent child. Likewise, just as every child must have the right to full educational opportunity and a sound nutrition, similarly every child should have the inalienable right to a sound heritage.

Human power is advancing with extraordinary rapidity in this realm of control over the genetic characteristics of the unborn.¹ It is possible that the human race, far from any aversion to such power will actually welcome it, seek it, fashion it and grasp at it tenaciously. The now perfected techniques of determining chromosome abnormalities in the developing fetus will now give a basis to rid us of the several percentages of all births that today represent uncontrollable defects such as mongolism and other sex chromosome deviant types.

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The procedure will be unquestionably most effective if carried out during the early embryonic stage of development or in the just-fertilized egg itself before it has begun its cleavage into numerous cells. Hence we must look with expectant attention at the startling progress that is being made in the laboratory of Dr. R. G. Edwards at Cambridge University, England, and in a few other places. He obtained oocytes from human females cultured them in media that permit their maturation, fertilized them with fresh spermatozoa and observed normal development of the embryo so produced to the blastocyst stage. At this point they normally become implanted in the wall of the mother's uterus and grow.

The way is thus clear to performing a prenatal adoption, for not only might the selected embryo be implanted in the uterus of the woman who supplied the oocytes, but in that of any woman at the appropriate time in her menstrual cycle. Dr. Edwards cautiously limits the application of his developing techniques to the provision of a healthy embryo for a woman whose oviducts are blocked and prevent descent of the egg. It should be obvious, however, that the technique can be widely extended. The embryos produced in the laboratory might come from selected genotypes both male and female.² Preservation of spermatozoa in deep frozen conditions with dimethyl sulfoxide could permit a high degree of selectivity among the sperm donors who so far have been limited to the husbands of the women donors of the oocytes.

Sex determination of the embryos is possible before implantation. The embryos with abnormal chromosome constitutions can be discarded. By checking the sperm and egg donors

with a battery of biochemical tests, matching of carriers of the same defective gene can be avoided or the defective embryos can themselves be detected and discarded. By preserving the reproductive cells obtained from young persons under conditions which minimize mutation, those same individuals may have offspring at relatively advanced age without incurring the higher probability of adverse gene and chromosomal defects that normally increases with age.

In the future age of man it will become possible for every person to procreate with assurance that the child, either one's own or one prenatally adopted has a sound heritage capable of fully utilizing the opportunities provided by society for optimal development. We do not know enough about the more complex aspects of human nature such as intelligence and personality to exercise strong selection wisely at present. The technique of cloning, making exact copies of highly desirable individuals could in time greatly add to the perfection of man's genetic pool.

What we will have to avoid are measures that might decrease the extent of human genetic diversity. The intelligence of man is an evolutionary product of natural selection for adaptability to great variations of surroundings, to tremendous vicissitudes of experience. Furthermore, intelligence depends upon a genetic pool in the populations of man to which many genes contribute in ever-shifting combinations produced by the patterns of heredity and reproduction. A pure line, no matter how perfectly selected for special excellence under given conditions could be well adapted only to particular conditions.

Man requires a challenge and a quest if he is to avoid boredom. He must have endless horizons as he acquires more fully the power to control his own genotype and to direct his own evolution he must produce a "Man who can transcend his present nature." But he will have to avoid the ultimate follies which his present powers have bestowed on him. If he can survive a few more centuries, we today can little perceive what he may be. At any rate, we physicians when we took the Oath of Geneva, have accepted the obligation to work in the Service of Humanity.—L.H.N.

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Degrading The Ocean

The rights to use our land and water in any way the production process requires are not seriously controlled. Our local, state and national governments appear hopelessly unprepared to exercise such a control. Our legislators and bureaucracy are not informed and appear unaware for the most part of the crises facing the world today. In these pages from time to time various aspects of environmental degradation and their social costs have been considered. Damage to the ocean itself has not been seriously considered until mercury was found in tuna. Until recently the oceans with their vast areas and volume have seemed a safe site for the disposal of waste. However, recent events are causing second thoughts.

Over half the population of this country is crowded close to the shores in part of course because of recreational and esthetic considerations. Increasingly, however, the nearshore ocean is the receiver of a multitude of toxic or offensive materials. If we are to enjoy our heritage we must exercise better stewardship. The oceans receive every year from natural processes about 10^{16} grams of material¹ mainly silicates but also substantial amounts of trace elements.

Because the oceans contain vastly greater amounts than the natural input the contributions of man might seem small. However, mixing in the ocean is slow, surface waters are relatively isolated from the deeps. Man's wastes are dumped near shore and physical, chemical and biological mechanisms act to produce substantial concentrating effects. Typical values of the concentration of mercury in the ocean range from .03 to 2 parts per billion (70 times). In contrast the values found in tuna are in the neighborhood of $.5 \times 10^{-6}$ parts per billion (2.3).

The amounts of DDT found in commercial fishes testify even more convincingly to extremely effective concentrating processes.³ Similar processes are known to occur with other toxic heavy elements. The extent of detrimental concentrations of organic substances in marine biota is less well established. For example, while we know that petroleum on the beach is offensive, we have little information on the extent to which some of its constituents are concentrated in marine animals to their detriment. Insuffi-

ciently treated human wastes are another source of damage to marine ecosystems. Lifeless zones have been created in the marine environments. There have been heavy fish kills and in other organisms. Shellfish have been found to contain hepatitis, polio virus and other pathogens.

The coastlines of the United States with their associated estuaries and salt marshes are highly productive biologically. Many animals live their entire lives in the environment. Marine pollution of various kinds has already seriously damaged the environment in some areas. The full extent of this damage is not known. Population studies are useful, but the population of a given species is influenced by many factors. Commercial fishes may be scarce because of disease, of overfishing, or failure of a food supply. When it is discovered that a species is disappearing, the time to save it is late.

Earlier warning could be provided by more intensive monitoring of chemical constituents of key members of a food chain, especially algae and fish. The items checked should include heavy metals, chlorinated organic compounds and possibly carcinogenic components of petroleum. Beyond monitoring, we need better knowledge of the extent to which potentially harmful molecules are concentrated or eliminated from various animals. In addition to chemical examinations, searches for incipient pathological abnormalities should also be conducted.

The recent measurements of mercury in tuna and of DDT in other fishes should warn us that we cannot count on the ocean as an almost infinite sink. We have awakened to the large concentrating effects and many more examples are going to be uncovered. Having been warned, it is urgent that we take action against heavy metal pollution. It is now imperative that we greatly expand a search for man-made and petroleum-derived chemicals in marine biota. At the same time we should do whatever is necessary to decrease the amount of petroleum released to the environment as well as to regulate the discharge of raw sewage into the oceans. How to accomplish this.

What we need is coming to be called technology assessment, a complete systems analysis of all the long range effects and side effects of each technological alteration before it is unloaded on society. Let us learn from a Czechoslovakian experience after WW II. They formed an Institute for the Study of the Biological

Landscape obviously in response to an overwhelming technological disaster that occurred after constructing a great mill in a wrong place, a narrow valley in the Tatra mountains where an atmospheric inversion layer pinned down the fumes heavy in SO₂ arising from combustion of local coal. Every living thing in the valley was killed.

In this country we need a profusion of such agencies before disaster strikes. Such institutes should deal not only with the environment and its alterations by technological innovation but also of the systems for predicting and regulating changes.—L.H.N.

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Dipyridamole And Aspirin Prevent Platelet Thrombosis On Prosthetic Heart Valves

It is believed that the two factors involved in venous thrombosis are reduced blood flow and hypercoagulability. Such clots are red and are similar to that found when shed blood is transformed from its fluid state into a solid fibrin coagulum. In this type of clot the platelets and other cellular elements of the blood are distributed more or less at random throughout the fibrin mesh. Dipyridamole substantially reduces the hypercoagulability and acts to prevent venous thrombosis.

Such drugs are not very useful in preventing arterial thrombosis. In these clots the initiating event appears to be the formation of a platelet aggregate accounting for the so-called "white head" of the thrombosis seen on histologic sections of fresh arterial thrombi.¹ Heparin does not inhibit the adhesion of platelets to foreign surfaces and has only a weak effect on platelet aggregation. The coumarin drugs have no effect at all, perhaps accounting for the relative ineffectiveness of anticoagulants in protecting against arterial thrombosis.

Platelet aggregation may be inhibited by a variety of drugs and this has opened up a new pharmacologic approach to prevention of arterial

thrombosis and also prevention of platelet clots that form on prosthetic heart valves. Among the drugs that inhibit platelet aggregation are anti-inflammatory agents such as aspirin³ psychotropic drugs such as chlorpromazine amitriptyline, imipramine and various antihistamines. Most of these agents appear to inhibit the release of adenosine diphosphate from exposed collagen in an arterial plaque and from platelets themselves.

The elegant studies of Harker and Slichter⁴ indicate that platelets may have a major role in the formation of thrombi on prosthetic heart valves. Such findings suggested to them that anti-platelet drugs might also be useful in preventing this type of thrombosis. This is especially important to achieve because now thromboembolic complications occur in patients with prosthetic heart valves despite the use of long-term anticoagulation. They decided, therefore, to study the nature of the thrombus formation hoping this would offer a clue on how it can be prevented.

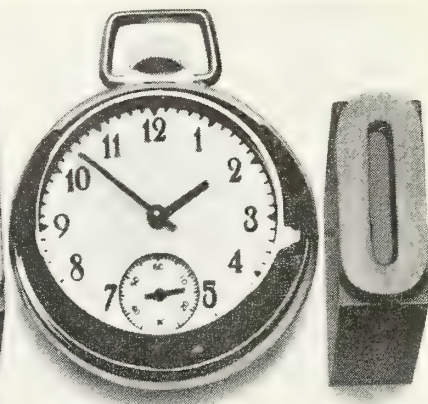
In a previous report these authors found that dipyridamole, a vasodilator, reduced the frequency of thromboembolism after prosthetic valve surgery. In this report they found that dipyridamole prevents deposition of platelets on the prosthetic valve. This is probably the mechanism by means of which embolism is reduced. They studied platelet survival time in 20 patients and found that platelets are destroyed by prosthetic heart valves without associated fibrinogen consumption. The reason for studying survival instead of count of platelets was because compensatory increases in thrombopoiesis can maintain the circulating platelet count at a normal or near normal level. There was no destruction of platelets when homograft valve was used. This seemed to exclude factors related to the operative procedure itself as the explanation for platelet consumption.

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crease hypnotic benefits.

ADVERSE REACTIONS: At recommended dosages, there have been rare occurrences of morning drowsiness, dizziness, mild to moderate gastric upset (including diarrhea, esophagitis, nausea and vomiting), headache, paradoxical excitation and skin rash. There have been a very few isolated reports of neutropenia and thrombocytopenia; however, the evidence does not establish that these reactions are related to the drug.

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effectively reduced. The combination of aspirin and dipyridamole produced the changes on platelets characteristic of that found with aspirin alone. It would seem then that the action of dipyridamole is to reduce the traumatic effect of the valve on the platelets after which aspirin works to reduce the adhesiveness of the injured platelets. This, however, although it could explain the synergistic effect of these two drugs still underscores both our limited understanding of the mechanism of thrombus formation and the difficulty of trying to anticipate the anti-thrombotic properties of a drug from its *in vitro* effects.

In other recent reports aspirin appeared to prevent arterial thrombosis whereas⁵ dipyridamole did not. This would suggest that the latter drug would probably be ineffective in treating arterial thrombosis as compared to the value of aspirin. The clinical effects of a drug can be determined only by carefully controlled trials. One such trial might be to see if aspirin either alone or in combination with other drugs reduces the frequency of myocardial infarction in a high-risk group of patients as suggested long ago by Craven.⁶

From the practical point of view Harker and Slichter's observation on patients with prosthetic heart valves means that the expense of dipyridamole and its hypotensive side effects can be greatly reduced if patients are placed on a daily regimen of 100 mg dipyridamole and 1 gram aspirin taken before retiring. This combination therapy apparently introduces no burden on the hemostatic apparatus greater than that imposed by aspirin alone and should make the use of anticoagulants superfluous.—L.H.N.

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Man And His Nutritional Environment

The usual American diet contains considerable more folate than the minimum required by an adult. Therefore partial inhibition of folate absorption would have little or no effect on most people. But if folate absorption is moderately decreased due to some unrecognized condition, a further decrease or inhibition of folate absorption could cause deficiency in a short period of time. This could explain the rare occurrence of folate deficiency in women receiving contraceptives orally, a complication that may be recognized more frequently in the future. Since some of Streiff's material¹ first appeared in abstract form 47 additional cases similar to those he described have been reported to him by colleagues.

Several types of orally administered contraceptives have been found to cause folate deficiency both sequential and nonsequential types. The folic acid deficiency associated with oral administration of contraceptives does not necessarily require the discontinuance of the drug regimen, although folic acid therapy is definitely indicated. This cause of folate deficiency will continue to be rare compared to the usual causes such as malnutrition malabsorption and pregnancy.

The folate deficiency described by Streiff is recognized as a megaloblastic anemia in which the polyglutamyl form of folic acid which predominates in natural foods does not appear to be absorbed as well as free monoglutamyl folate by women taking the contraceptive pill. The incidence of megaloblastic anemia occurring in these circumstances is rare. Nonetheless, the observation may have significant bearing on physiological mechanisms. One such is the well known observation that the chorion has a remarkably high requirement of folic acid, and deteriorates in the presence of folate deficiency or folate antagonists. It is this observation which constituted the rationale for the successful use of methotrexate in the treatment of choriocarcinoma.²

Certain questions come to mind with regard to Streiff's observation on oral contraceptives and megaloblastic anemia. Is it possible that pituitary gonadotropin which is depressed by oral contraceptives exerts hormonal control over the absorption, transport, and storage of folic

acid. Thromboembolism is said to rise in patients taking contraceptives; what might be any connection between folate deficiency and venous thrombosis.

There are complex interactions between amino acids, pyridoxine folic acid and vitamin B12. For example Waxman³ found that glycine metabolism is folate dependent. He found that homocysteine tends to augment the in vitro action of B12 in correcting the metabolic defect of bone marrow of patients with pernicious anemia. Knowledge such as this concerning these metabolic pathways is vital to the understanding of nutritional deficiency disease, the action of certain drugs and the therapy of certain hereditary enzyme defects. For example, homocystinuria is an inborn error of methionine metabolism characterized by mental retardation lenticular dislocation, low serum folate levels and thromboembolic disease. Can this last complication be due to high concentrations of homocysteine in the blood? If this were so then patients with thromboembolic disease may benefit from the study of seemingly unrelated disorders such as homocystinuria and megaloblastic anemia of pregnancy.

The folic acid antagonists are now undergoing evaluation as antimalarial agents. They destroy plasmodia presumably by preventing conversion of dihydrofolic acid to tetrahydrofolic acid which is the metabolically active form. Methotrexate is a powerful folic acid antagonist. It was first introduced into clinical medicine as an anti-leukemic agent over 20 years ago. Sheehy and Dempsey⁴ applied this folic acid antagonist and eradicated plasmodial parasitemia within 48 hours after giving 7.5 mg per day, a very small dose. Methotrexate thus appears to be a highly potent antimalarial with a relatively high therapeutic index. Further study is needed to determine if it will be acceptable for more general use in the treatment of malaria and possibly even in malarial prophylaxis. Apparently its action is against rapidly dividing human tissue and destroys rapidly dividing plasmodia by disrupting this ability to synthesize nucleic acid.

Sheehy and Dempsey's report raises some interesting questions. What, for example, might be the relationship of nutritional folate deficiencies to the epidemiology of malaria. Might there be other exploitable differences between the nutrition of the host and pathogenic organism. Kozloff and Lute⁵ have demonstrated the presence

of folic acid as an essential structural component of certain strains of bacteriophage. One could thus ask whether folic acid analogues might turn out to be antiviral agents. For example, when methotrexate induces remission in acute childhood leukemia, does it act as a nonspecific toxic compound indiscriminately destroying rapidly dividing cells, or as a highly specific inhibitor of viral replications.

The three reports represent new knowledge as well as practical application of existing information. They point up the wide ranging importance of nutrition in the practice of medicine. They indicate the importance of basic knowledge concerning nutrition for the understanding of disease mechanisms. They reveal vast potential benefits that may be derived from studies on the relationship of man to his nutritional environment.—L.H.N.

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The Art Of Medicine: Psychology Plus Science

Dr. S. A. Nigro, a trained psychiatrist was interested to assess directly the incidence of psychological problems encountered in an emergency room. This he thought might reveal the kind of training physicians should have in managing psychological problems in their practice. Accordingly, he returned to a part-time practice of general medicine and surgery in an emergency room of a suburban general hospital of 265 beds. During a 5 month period he saw 469 patients between 10 P.M. and 8 A.M. on 45 separate occasions.

He classified them under one of nine categories all the way from psychiatric psychosomatic to medical surgical to legal categories (litigious). These last came to the emergency room because of ulterior motives, especially to start a compensation suit. "I got a whip lash

doc" compared to the hysteric's "I can't move my left hand, I am paralyzed." He found that managing such cases required profound honesty because the easiest method was to go along with the patient. Firmly confronting a patient with his own role in the healing of a myofascial strain helped him to recognize that any long standing problem would probably be due to his own inability to co-operate rather than to the accident. This kind of skill is what he refers to as the Art of Medicine which he thinks requires some psychiatric training.

Twenty three percent came to the emergency room primarily because of psychological problems. In the final analysis 133 patients required acute psychological management if their other medical needs were to be properly met. It was in these cases that the psychological substrate underlay their appearance in the emergency room. In contrast, psychological and psychosomatic problems independent of physical problems that needed attention were only 15 percent of the total sample. Of the 133 patients requiring acute psychological management only 37 were urged to seek psychiatric help while the remainder were readily and appropriately helped by Dr. Nigro. He was able to refer 80 percent back to their own physicians.

These findings show the need for psychologically sound technique in managing emergency room patients because of the frequency of psychological problems among them. The findings are all the more important because of the increasing use of the emergency room.² As Dr. Nigro points out the emergency room is becoming the "family physician" for an increasing number of our population and is becoming the primary source of help for patients with "human" problems whether physical, social or emotional. Almost one third of the patients coming to the emergency room needed, for optimal care, sophisticated psychological attention to their problems. At the same time if they receive this attention then three quarters didn't require psychiatric referral and were in fact best taken care of in the emergency room by a family physician psychiatrically oriented.

Of course, it was the specialty training in psychiatry that altered the way in which Dr. Nigro perceived and managed the patients so effectively in comparison to the care he could provide when he was an intern and in private prac-

tice prior to his special training in psychiatry. He was in a position to recognize his "before-and-after" experience. He now found psychological emergencies because he looked for them, in contrast to his prepsychiatry practice when he lacked the ability to do so.

Accordingly, he was able to render psychological assistance quickly which seemed readily acceptable to the patients and their families in the context of the emergency room. He was surprised not to encounter the resistance which is often noted in a psychiatric office practice. He could do and say in the emergency room what would be ineffective and unacceptable in his psychiatry office. The medical-surgical techniques that good medical care required were seen as potential stresses to mental health and he knew how to make the correct efforts to assuage the inherent psychic insults associated with the diagnostic and therapeutic procedures. This, of course, is the true art of medicine psychology plus science. This art had been lacking in medical education.

Some degree of psychiatric orientation and awareness of the psychic components of man is indispensable for the practicing physician. Offering the sympathetic ear to the patients troubles, probing those that are relevant, providing the reassuring word where indicated and calling for more profound or specialized help where necessary is a function of the family physician and must so remain. Indeed, an orientation to psychosocial problems and an understanding of their influence on disease should be a major demand on current medical education and training.

What then is the "Art of Medicine" and what can the psychiatrist contribute to it? Perhaps it cannot be formulated until psychiatrists become directly familiar with medical practice. If the "whole patient" is to be the primary focus of medical care the Art of Medicine the one to one interaction between physician and patient must be analyzed and made teachable to enable physicians to meet the psychological needs of their patients. Until this is done both patient and physician will suffer.—L.H.N.

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Hazards Of Rectal Temperature Taking In Infants and Toddlers

The commonest cause of blood in the stool of a toddler or young child is constipation, often associated with an anal fissure; However blood in the stool of a baby may be due to someone taking his temperature by unwisely inserting a thermometer in the rectum. Occasionally a thermometer may cause more than rectal bleeding. It may perforate the rectum or colon. The rectum is directed anteriorly immediately proximal to the anus. In the newborn baby the distance between the anus and the peritoneal deflection over the rectosigmoid is less than 2 cm. This makes it self-evident that the thermometer should not be inserted further than 2 cm. If the rectal thermometer is inserted further than 3 cm. from the anus and is not directed posteriorly it may penetrate the anterior wall of the rectum above the peritoneal reflection. This in fact is the usual site of perforation.

Thus a thermometer may cause more than rectal bleeding. It may perforate the rectum or colon. Smuddy and Benson¹ after describing a case of rectal perforation in a newborn baby by this means rightly concluded that "the taking of a rectal temperature in a neonate is potentially a very dangerous exercise. Fonkalsrud and Clatworth² described the causes of perforation of the colon and rectum of ten infants, five of which had no underlying disease except constipation and two of these died. In six cases the perforation was caused by an enema tube and in two by a thermometer. Perforation was also caused by a practice, routine in some centers of passing a rectal catheter to ensure that there is patency of the rectum.

J. J. Wolfson³ reviewed cases of hemorrhage and perforation of the rectosigmoid by thermometers. He noted that the bleeding sites have been oval ulcerations on the outer wall of the rectum usually 4-8 cm. from the anus and that damage is probably caused by leaving the child unattended, the child then kicking his legs and wriggling so that bleeding or perforation occurs. E. I. Greenbaum, et al have reported two further cases of perforation from a thermometer which penetrated the anterior wall of the rectum just above the peritoneal reflexion.

Symptoms of perforation are immediate abdominal pain, vomiting, respiratory distress, meteorism, restlessness and shock followed by

those of peritonitis. This diagnosis is established by X-ray examination in the supine, upright and prone positions for subdiaphragmatic and often intra-abdominal air. Treatment of course is surgical, by closure of the perforation and temporary colostomy.

These references tell us that the temperature should not as a routine be taken via the rectum. It is unhygienic, unnecessary and dangerous. Nor is there any need to pass a catheter as a routine to ensure patency of the rectum. The temperature of a baby should be taken normally in the axilla, holding the thermometer in situ for not less than 2 minutes. The risk of hemorrhage and perforation should be born in mind even in those babies who must be monitored for the accurate diagnosis of hypothermia and in some other circumstances in ill babies, in whom the rectum will continue to be used for recording temperature.

L.H.N.

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CALL

ANNUAL MEETING OF THE HOUSE OF DELEGATES

The 1971 Annual Meeting of the House of Delegates is scheduled to be held in the Terrace Room of the Hartford Hilton Hotel, Hartford, on Tuesday, April 27, commencing at 8:30 A.M. Following luncheon, the House will reconvene for the completion of its business.

Morris A. Granoff, President
Kenneth F. Brandon, Speaker of the House
Reginald C. Edson, Secretary

INTRODUCTION OF RESOLUTIONS

Article V, Section 12, Par. 3 of the Bylaws of the Society Provides that:

All resolutions to be considered as regular business at any regular meeting of the House of Delegates must be in the hands of the Speaker not later than seventy-two hours before the opening of that meeting. All resolutions and recommendations published in the official agenda distributed to the members of the House prior to the meeting at which action is to be taken shall be considered as regular business. Resolutions presented later than seventy-two hours before the opening of a meeting will be referred for consideration as regular business by the House only when they are presented by the Council or accepted for consideration by majority vote of the delegates present. Any resolution which does not qualify in accordance with the aforesaid provisions for consideration as regular business may be accepted for action by a majority vote of the delegates present and, if so accepted, shall be referred at once by the Speaker to a reference committee. Any such reference committee shall consider resolutions referred to it and shall report, with recommendations to the House before adjournment of the meeting.

PROPOSED AMENDMENTS TO THE BYLAWS

The following proposed amendment to the Bylaws was presented to the House of Delegates on November 19, 1970 and was tabled for consideration and action at the next regular meeting of the House of Delegates.

In accordance with the Bylaws, this amendment will be published in *Connecticut Medicine* "on one or more occasions prior to the next meeting . . . at which meeting the amendment shall be taken off the table and acted upon by the House of Delegates."

Introduced by the Council
I. HOUSE OF DELEGATES

Purpose: To allow the Speaker, or, in his absence, the Vice-Speaker, to arrange the order of business for meetings of the House of Delegates in such manner as to expedite the business of the House by taking into account the amount and nature of the business to come before the meetings.

Article V—House of Delegates
Section 12. Procedure.

(Delete underlined words and add words in capitals)

Par. 1. Order or Business. (The following shall be the general order of business at all sessions of the House of Delegates:) **THE SPEAKER, OR IN HIS ABSENCE, THE VICE-SPEAKER, SHALL SET THE ORDER OF BUSINESS FOR EACH MEETING OF THE HOUSE OF DELEGATES AND SHALL HAVE PUBLISHED IN THE AGENDA FOR THAT MEETING THE ORDER**

OF BUSINESS TO BE FOLLOWED. THE GENERAL CATEGORIES OF BUSINESS TO COME BEFORE THE HOUSE AT ALL REGULAR MEETINGS SHALL INCLUDE THE FOLLOWING:

- Call to Order by the Speaker
- Roll Call
- Report of Reference Committee on Credentials
- Speaker's Remarks an Appointment of Reference Committees
- Reading and Adoption of the Minutes of the Previous Meeting
- Introduction of Guests
- Reports of Officers
- Reports of Committees
- Presentation of Awards
- Old Business
- New Business, and Reports of Reference Committees
- Adjournment

At any meeting, (the House,) by majority vote, THE HOUSE may change the order of business.

DELEGATES TO ANNUAL MEETING

The Bylaws of the Society provide that each county association is entitled to one delegate in the House of Delegates for each thirty-five Active or Life Members in the association or fraction thereof based on the membership as of December 31st of the immediately preceding year. In order to be eligible for membership in the House of Delegates, a physician must have been an Active Member or Life Member of The Society for at least two years immediately preceding the session of the House in which he is to serve. According to this, the quota of delegates from each county association who should attend the Annual Meeting of the House of Delegates which will be held in Hartford, April 27, 1971, and the Semi-Annual Meeting in December, 1971, is as follows:

County	Membership Dec. 31, 1970	Official Delegates
Fairfield	1020	30
Hartford	1180	34
Litchfield	153	5
Middlesex	129	4
New Haven	1042	30
New London	212	7
Tolland	32	1
Windham	82	3

ELECTION OF COUNCILORS AND ASSOCIATE COUNCILORS

Councilors and Associate Councilors, who shall serve for two years, shall be elected this year at the annual meeting of each of the county associa-

tions in Hartford, Middlesex, New London and Windham counties. In accordance with the Bylaws, each component association having over 750 members may elect one additional Associate Councilor. Therefore, the Hartford County Medical Association should elect a Councilor and two Associate Councilors for a two year term.

No Councilor or Associate Councilor elected by a component association shall serve more than three successive terms of two years each in his respective office, but after a lapse of one term of two years, such Councilor or Associate Councilor shall be eligible for reelection.

Newly elected Councilors and Associate Councilors shall not assume office until after the Annual Meeting of the House of Delegates.

In the event that both the Councilor and the Associate Councilor(s) from a county association cannot be present, the President of the county association may appoint a substitute councilor.

SUMMARY OF ACTIONS
COUNCIL MEETING

Thursday, January 21, 1971

I. Attendance

Present in addition to the Chairman, Dr. S. J. Martin, and the Vice-Chairman, Dr. K. F. Brandon, were: Drs. Granoff, Weber, Jr., Grendon, Burnham, Edson, Abbot, Dean, Gardner, Fabro, Rem, Cramer, Ragland, Jr., Harwood, Pelz, Roch, Nemoitin, Friedberg, Harkins, Freedman, Root, Jr., vonGlahn, Hess and Bradley.

Also present were: Mrs. Lindquist, Mr. Olson (FCMA), Mr. Gordon (HCMA), Mr. Donelan (AMA), Mr. Sullivan, Mr. Tomat and Dr. Richards.

Absent were: Drs. Wilson, Jr., Palomba, Van-Syckle, Johnson, LaBella, Purnell and Klare.

II. Routine Business

Approval of Minutes

As printed and distributed, it was VOTED to approve the minutes of the meeting of December 16, 1970, except that Dr. Fabro wished it to be noted that the Connecticut Hospital Association (and not CRMP) has assumed the responsibility of drawing up the provisions for the CUISS Program (including "confidentiality" and "informed consent") in preparation for the transfer of the CUISS operation from CRMP to private companies.

Life Memberships

It was VOTED to approve applications for Life Membership submitted by the following eligible Active Members:

Francis H. Burke, 45 Park Street, Rockville (TCMA)—1971

Clarence H. Cole, 111 West Main Street, Waterbury (NHCMA)—1971

Nicholas M. Comodo, 169 Church Street, Guilford (NHCMA)—1971

Robert D. Cunningham, 1435 Bedford Avenue, Stamford (FCMA)—1971

Terence F. McNulty, 21 Sission Avenue, Hartford (HCMA)—1971

Harry Resnik, 881 Lafayette Street, Bridgeport (FCMA)—1971

Luther M. Strayer, P.O. Box 1813, Duxbury, Mass. (FCMA)—1971

CSMS Dues Exemptions

It was VOTED to exempt from payment of CSMS membership dues the following Active Member for the reason and period stipulated:

Michael R. Longo, Jr., Georgia (NHCMA)—Military Service—1971

III. Old, New and Special Business

Election of Student Members

It was VOTED to elect to Student Membership 19 Connecticut residents who are enrolled in American medical schools. A list of those elected will be published in the Journal.

Resignations, Appointments, Etc.

(a) *Committee on Drug Abuse Education:* It was VOTED to accept the decision of John Donnelly, Hartford, to decline appointment to this Committee (12/16/70) and it was further VOTED to appoint to membership on the Committee the following: Duncan R. MacMaster, Torrington; Richard T. Kramer, Torrington; and Sal A. Prins, Middletown.

(b) *Board of Examiners of Hypertrichologists:* Having been advised that William B. Swarts, Greenwich, has submitted to the Governor his resignation as a member of this Board (term: 7/1/69-6/30/72), it was VOTED to request the CSMS Section on Dermatology to assume the responsibility for locating, and recommending to the Council for nomination to the Governor, a Board-certified dermatologist who is willing and able to accept appointment to this Board of Examiners to complete the balance of Dr. Swarts' current term.

(c) *Representative to the Connecticut Health League:* It was VOTED to appoint William T. Cronin, Norwalk, as a CSMS representative to the CHL to complete the term (1968-71) of John J. Scanlon, Norwalk, resigned.

(d) *Judicial Committee:* It was VOTED to accept with regret, and thanks for past service, the resignation of Ralph L. Gilman, Storrs, from at-large membership on the Judicial Committee. It was further VOTED to defer appointment of a replacement for Dr. Gilman on the Committee until the next meeting of the Council.

(e) *CSMS-Designate on CRMP Advisory Board and Executive Committee:* The Council was informed by Norman H. Gardner, East Hampton, that his term as a member of the CRMP Advisory Board has expired and that he does not wish to be nominated for another term. His CSMS designation as a member of the CRMP Executive Committee was contingent upon his being a member of the Advisory Board. Expressing regret at his decision, and thanks for past service, the Council VOTED to nominate J. Alfred Fabro, Torrington, to succeed Dr. Gardner in both posts.

(f) *Ad Hoc Committee on Statewide Medical Planning:* At the meeting of 12/16/70, the Council voted to form an Ad Hoc Committee on Statewide Medical Planning, with the President serving as chairman, ex-officio, and being asked to appoint the members thereof. Morris A. Granoff, President, informed the Council that he is obliged to decline this additional post and asked for reconsideration of the 12/16/70 action. It was VOTED to reconsider the action. It was further VOTED to amend the previously-established mechanism for forming the Committee by naming the President-Elect (by title) to serve as chairman, ex-officio, and to assume responsibility for appointing the members of the Committee. The incumbent President-Elect is Frederick C. Weber, Jr., Greenwich.

Connecticut Medical Service, Inc.

Pursuant to a 12/14/70 meeting of CSMS and CMS representatives, the Council received and considered a letter in which the CMS President, Mr. John M. C. Betts, informed the Council of the reaction of the CMS Board of Trustees and Executive Committee to the various matters that had been discussed at the December liaison meeting. In particular, he outlined a proposal of the Board which would grant to the Society the privilege of nominating two *new* (additional) members of the Board, with any further consideration of restoring CSMS' former nominating privileges to be held in

abeyance until (a) the Council had accepted and implemented this proposal and (b) it had been determined whether or not the County Medical Associations that do not now make nominations to the CMS Medical Advisory Committee wish to re-assume their prerogative to do so.

Following a lengthy discussion of the CMS subject proposal, during which it became clear that the proposal was considered to be generally unsatisfactory by a large majority of the discussants, it was VOTED that the Council *not* undertake further exploratory discussions with CMS regarding the possibility of resuming a CSMS-CMS relationship, and that the Council report this action to the House of Delegates with explanation and recommendation. It was further VOTED that the President reply to Mr. Betts' letter, informing him of the sense of the Council's discussion of the Board's proposal and of the Council's decision not to pursue the matter at this time.

Project Proposal—Committee on Drug Abuse Education

It was VOTED to approve a proposal of the Committee to hold two conferences on drug abuse education, one at Fairfield Hills Hospital, Newtown, on March 31, 1971, and the second at Trinity College, Hartford, on April 1, 1971. Being advised that the Pfizer Company has agreed to underwrite a substantial part of the estimated costs of the conferences, the Council VOTED to approve a recommendation of the Fiscal Committee that the Society contribute up to \$1,200 to the covering of said costs.

Project Proposal—AMA-AMPAC Public Affairs Workshop

The Council was informed that this Workshop will be held in Washington, D.C., March 13-14, 1971, and that AMA will reimburse 50% of travel and hotel expenses of "five official representatives". Bernard A. Burnham, chairman of the Public Affairs Division, proposed that the Society send additional members, to be selected by himself in consultation with the Executive Director, such members to be designated from among members of the Council, the chairmen of the four committees under the Public Affairs Division and the presidents-elect of the component County Medical Associations. In total, the additional members would probably number approximately twenty. It was VOTED to approve Dr. Burnham's proposal, and it was further VOTED to approve a recommendation of the Fiscal Committee that the members attending be reimbursed for expenses in an amount not to exceed \$150 each and that funds of up to \$2,000, cumulatively, be allocated for this purpose.

Report—Liaison Committee with Welfare Department Report—Committee on State Legislation

- (a) It was VOTED to accept as information a report submitted by the Liaison Committee with the Welfare Department. The report commented on a number of matters but, in particular, made recommendations concerning legislative actions the Society should take at the 1971 General Assembly with respect to the Medicaid program. It was further VOTED to consider these recommendations in conjunction with the report of the Committee on State Legislation which follows.
- (b) It was VOTED to accept a report of the Committee on State Legislation which informed the Council of the progress that has been made toward having introduced at the General Assembly the several bills that the Society is to sponsor. Taking up the sections of the report seriatim, the Council VOTED as follows:
 - 1. To approve the draft of the CSMS-sponsored bill on abortion.
 - 2. To approve the draft of a CSMS-sponsored bill on sterilization.
 - 3. To approve the draft of a CSMS-sponsored bill concerning payments under Medicaid. It was determined that the subject draft included most, if not all, of the recommendations made by the Liaison Committee with the Welfare Department in its report ((a) above).
 - 4. To approve the draft of a CSMS-sponsored bill providing immunity from liability for physicians serving on hospital utilization review committees without compensation.
 - 5. To approve the draft of a CSMS-sponsored bill providing for confidentiality of the records of hospital medical staff committees on morbidity and mortality.
 - 6. To approve the draft of a CSMS-sponsored bill concerning the confidentiality of communication and records of mental patients to allow psychiatrists to testify in conservatorship proceeding with consent safeguards.
 - 7. *Not* to approve for CSMS-sponsorship the draft of a bill concerning optometry and its practice.
- (c) It was VOTED to direct the Chairman of the Council to notify all Sections of the Society that the Society's legislative program is implemented by the Committee on State Legislation, in consultation with the Council, and that any bills that a Section desires to have promulgated

shall be submitted to the Committee on State Legislation for evaluation and appropriate action. Independent legislative activities by Sections, making identification with the Society, are contrary to established CSMS policy.

- (d) It was VOTED that Dr. Friedberg, Chairman, and the members of the Committee be commended for the hard work, good sense and expeditious manner by which the work of this committee was accomplished.

**Report of Connecticut Hospital Planning Commission
"Obstetrical Services in Connecticut"**

The Council gave summary review to a two-volume report on "Obstetrical Services in Connecticut", published recently by the Connecticut Hospital Planning Commission, and VOTED to accept as information a report and commentary submitted by Stewart J. Petrie, Derby, on the participation in the CHPC study of a Technical Advisory Committee (nominated by CSMS) of which he served as chairman. A lengthy discussion of both documents ensued. In essence, Dr. Petrie reported that, while all members of the TAC were not in agreement concerning the conclusions and recommendations of the CHPC study and most felt that some of same merited further careful consideration before implementation, there was a consensus among the TAC members that opportunity for their participation in the study on a step-by-step basis had been very limited and that inadequate time had been allowed for their perusal and evaluation of the staff-finalized draft of the CHPC report. Council members serving on the Commission and on the CHPC "Fact Finding and Review Committee" similarly observed that their "approval" of the report documents had been sought and obtained in haste (in some cases by telephone) and without their having been given sufficient time in which to make an informed judgment.

A Council member from Litchfield County took particular exception to the report's recommendation that the Winsted Memorial Hospital close down its obstetrical service and merge with the Charlotte Hungerford Hospital in Torrington to form a single, combined unit. The member read a letter from the president of the Winsted Hospital's Board of Directors to the Executive Director of CHPC in which the former pointed out several discrepancies in the subject data from that institution used in the report, recounted the continuing and successful efforts made by the Board and the Medical Staff to upgrade the quality of obstetrical and

pediatric services at the hospital, and concluded that the recommendations of the CHPC report, while interesting and of possible future value, did not fit into that Hospital's present plans for serving the people of the Winsted community area.

Pursuant to the latter discussion, it was VOTED to approve a motion as follows:

IT IS MOVED: That the Council of the Connecticut State Medical Society express disapproval of the recommendations of the "Obstetrical Services" report of the Connecticut Hospital Planning Commission with respect to the Obstetrical-Gynecological Service at the Winsted Memorial Hospital, noting that some of the statistics attributed to that hospital by CHPC are not current; and it is further

MOVED: That the Council express concern that the promulgation of the subject CHPC recommendations at this time would appear to pose a serious threat to the viability of the Winsted Memorial Hospital as a community service facility; and it is further

MOVED: That the Council reaffirm its conviction that it is necessary to preserve the integrity of community hospitals in their full community service, and the right of the people, locally, to procure for themselves the medical coverage they desire and are able to afford without undue or frivolous outside interference; and it is further

MOVED: That the Council inform the members of the Connecticut Hospital Planning Commission, the Commissioner of the State Department of Health, the State Council on Hospitals and the Governor of Connecticut of these expressions of opinion.

The staff was directed to release notices of this action to the newspapers in Litchfield County.

Further discussion followed regarding the reported *modus operandi* used by CHPC to obtain "approval" of the subject "Obstetrical Services" document; i.e., presenting the final draft to members of the Technical Advisory Committee and of

the Commission so close to a stipulated deadline for approval that proper, in-depth perusal of the draft was not feasible.

Pursuant to the discussion of this aspect of the CHPC report, the Council VOTED to approve a motion as follows:

IT IS MOVED: That the Council of the Connecticut State Medical Society deplore the reported practice of the Connecticut Hospital Planning Commission of presenting voluminous and complex documents to members of the Commission, requesting their approval, so close to quarterly meetings that the documents cannot be properly studied by the members; and it is further

MOVED: That the Council deplore, in particular, the reported use of a telephone poll to obtain the approval of Commission members of the document "Obstetrical Services in Connecticut", without affording the members an opportunity to jointly discuss the philosophy, findings, conclusions and recommendations of the document before granting such approval; and it is further

MOVED: That the Council express the opinion that, whatever the merits of said document may be, the reported procedure followed to obtain its approval by members of the members of the Connecticut Hospital Planning Commission raises serious questions as to its credibility with respect to its conclusions and far-reaching recommendations.

It was further VOTED to direct the staff to send copies of the foregoing actions to: The Governor; the Commissioner of Health; members of the CHPC; and the State Council on Hospitals.

N.B.: The foregoing is a summary of the proceedings and action of the Council on January 21, 1971. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by an interested member of the Society.

Placement Wanted

Emergency Room—30 years of age, National Boards, wishes a temporary position in Connecticut. Presently in Practice. Available immediately. Contact: Ronald S. David, M.D., USAH, USASA FS, CHITOSE, APO San Francisco 09281.

Internal Medicine—Pulmonary—32 years of age, National Boards, wishes group or institutional type practice in a large or medium size community in Connecticut. Presently in practice. Contact: Stephen R. Fish, M.D., 19 Rockaway Lane, Arlington, Massachusetts 02174.

Internal Medicine—Hematology—34 years of age, Eligible with National Boards wishes group or associate type practice in a medium size community in Connecticut. Presently in practice. Military obligation completed.

Obstetrics & Gynecology—28 years of age, National Boards, American Board Eligible, wishes solo, group or associate type practice in a large or medium size community in Connecticut.

Obstetrics & Gynecology—30 years of age, National Boards, American Board Eligible, wishes solo or group type practice in Connecticut. Contact: Frederick S. Feiner, M.D., 3218 Deerfield Road, Laurel, Maryland 20810.

Ophthalmologist—35 years of age, military duty completed, interested in the following opportunities: In Connecticut coastal area: Available space in large medical building, or association/partnership with established ophthalmologist, or purchase of ophthalmology practice from retiring or infirmed practitioner. Must return to east coast due to family reasons, from San Diego where presently in practice. Would consider Locum Tenens.

Ophthalmology—30 years of age, National Boards, American Board Eligible, wishes associate, solo or group type practice in a medium, large or small size community in Connecticut. Contact: John P. Tortorella, M.D., 7 East 14 Street, New York, New York 10003.

Orthopaedic Surgery—31 years of age, National Boards, wishes associate type practice in a large community in Connecticut. Contact: Robert A. Berselli, M.D., 62-4 Drexelbrook Drive, Drexel Hill, Pa. 19026.

Orthopedics—32 years of age, National Boards, American Board Eligible, wishes solo, group or associate type practice in a medium size community in Connecticut. Contact: Anthony A. Rizzo, M.D., 3341 Peter Lane, Yorktown Heights, New York 10598.

Physician—27 years of age, with National Boards, desires part-time work, weekends, evenings, or vacation coverage. Connecticut license. Available immediately.

Surgery—31 years of age, National Boards, American Board Certified, wishes group or associate type practice in a large or medium size community in Connecticut. Connecticut license. Contact: Girard A. Chapnick, M.D., 1023 B Drennan Park, Fort Campbell, Kentucky 42223.

General Surgery—31 years of age, Certified with National Boards, wishes group or associate type practice in Connecticut. Contact: Raymond F. Crystal, M.D., 1021-A Drennan Park, Fort Campbell, Kentucky 42223.

General Surgery—32 years of age, Certified with National Boards, wishes solo; group or associate type practice in a medium size community in Connecticut. Desires a college or university city or town in which to practice. Presently in

Gone with the wind



practice. Available immediately. Contact: **Peter A. Gentling, M.D.**, 1542 Lombard Street, San Francisco, California 94123.

Surgery—34 years of age, American Board Certified, wishes group or associate type practice in a medium size community in Connecticut. Available immediately. Contact: **Gangadhar L. Maddiwar, M.D.**, 41-30, 43rd Street, Sunnyside, New York 11104.

General Surgery—35 years of age, National Boards, wishes group or associate type practice in a medium or small size community in Connecticut. Military obligation completed. Contact: **Martien Mulder, M.D.**, 43 Walnut Street, Coopers-town, New York 13326.

General and Thoracic Surgery—48 years of age, Eligible, wishes solo, group or institutional type in a large or medium size community in Connecticut. Available immediately. Contact: **Roger Paulin, M.D.**, 2115 Drummond, Suite 22, Montreal 107, Quebec-Canada.

General & Thoracic Surgery—32 years of age, National Boards, American Board Eligible, wishes group or institutional type practice in Connecticut. Prefer hospital with medical school affiliation and with residency training program in surgery. Contact: **Joseph B. Twichell, M.D.**, 435 East 70th Street, New York, New York 10021.

Urology—33 years of age, National Boards, American Board Eligible, wishes solo or associate type practice in Connecticut. Contact: **Albert V. Assali, M.D.**, 8796 Encino Avenue, San Diego, California 92123.

Urology—33 years of age, National Boards, wishes associate type practice in a large size community in Connecticut. Military obligation completed. Contact: **Melvin A. Mackler, M.D.**, 9306 Newhall Road, Richmond, Virginia 23229.

Urology—30 years of age, National Boards, American Board Eligible, wishes to practice in Connecticut. Contact: **Melvyn Rosenstein, M.D.**, 350 East 30th Street, New York, New York 10016.

ANYONE INTERESTED IN THE ABOVE IS ASKED TO CONTACT THE PHYSICIANS PLACEMENT SERVICE, 160 ST. RONAN STREET, NEW HAVEN, CONNECTICUT 06511.

Placement Opportunities

Doctor interested in student health service, Connecticut College, New London, Connecticut. Full-time or part-time. Contact **Mary N. Hall, M.D.**, Director, Student Health Service.

Emergency Room—Full time position in 250 bed Bristol Hospital. General Practitioner or specialist. To join 4 full time physicians rendering 24 hour medical coverage to 55,000 community. Excellent new facilities, nursing and specialty backup. Salary plus liberal benefits for full time. Call or write **Richard P. Fredericks, Administrator**, Bristol Hospital, Brewster Road, Bristol, Connecticut 06010. Phone 589-2000.

Obstetrics & Gynecology—A fourth ob-gyn, with military obligation completed, is wanted to join three Board-certified ob-gyns practicing in a Southeastern Connecticut town.

Pediatrician—Board certified or eligible. Busy practice requires associate—salary first year, then partnership. Excellent location and schools—between New Haven and New York. City facilitates hospital appointments.

Pediatricians—At least 2 Pediatricians are needed for private practice to serve a growing community of over 50,000. Area

consists of several towns with 3,000 to 14,000 population each. Good country living with easy access to major cities via well developed highway system. Contact: **Edmond B. Reheb, M.D.**, 14 Carter Street, Danielson, Connecticut 06239. Telephone: 203-774-5151.

Physicians needed in the following specialties: Anesthesiology, Internal Medicine, General Medicine, Psychiatry, Otorhinolaryngology, Neurology, Obstetrics and Gynecology to practice in Torrington, Connecticut and surrounding communities. Modern 191 bed general, short term, voluntary hospital in Northwestern Connecticut, with all major medical and surgical specialties represented, serves a population of 50,000. Search Committee of the Medical Staff will assist qualified candidates. Write or call: **Thomas H. Walker, M.D.**, Chairman of Search Committee, The Charlotte Hungerford Hospital, Torrington, Connecticut 06790, Phone: 203-489-0441.

Physicians—General Practitioner needed. 8 room house with fully equipped office available; no X-ray equipment. Connecticut shoreline community.

Psychiatrist—Consultant full or part-time with Connecticut State Welfare Department Medical assistance program. Connecticut license.

Staff Psychiatrist—New Britain (Central Connecticut). Part-time, 20 hours. Progressive mental health clinic, connected with Regional Mental Health Center. 400 bed general hospital psychiatric in-patient unit and affiliated with UConn Medical School. Opportunity for private practice in the community. Write: **Medical Director**, Mental Health Clinic, New Britain General Hospital, 100 Grand Street, New Britain, Connecticut 06050.

ANYONE INTERESTED IN THE ABOVE IS ASKED TO CONTACT THE PHYSICIANS PLACEMENT SERVICE, 160 ST. RONAN STREET, NEW HAVEN, CONNECTICUT 06511.

ARS Medica Exhibit Announced March 24-May 2, 1971

An exhibition of graphic art relating to medical subjects will be displayed in the Avery Court of the Wadsworth Atheneum in Hartford from March 24 through May 2, 1971. The prints, including woodcuts, etchings, engravings, lithographs, and serigraphs, range chronologically from the 15th through the 20th centuries. Subjects include anatomical studies, humorous caricatures, portraits of famous medical figures, and contemporary compositions. Artists such as Durer, Rembrandt, Rowlandson, Daumier, Toulouse-Lautrec, and Rauschenberg are represented, as well as many others.

The exhibition is being sponsored by the Hartford Medical Society. Museum hours are presently 10 to 5, Tuesday through Saturday, and 1 to 6 on Sunday.

This exhibit will be open during the Annual Meeting of the Connecticut State Medical Society, April 27-29, 1971 and the Hartford Medical Society has extended an invitation to members of the Connecticut State Medical Society to view this exhibit during their visit to Hartford.

The Use Of Drugs In Various Types Of Cancer

David S. Fischer, M.D.

Part II

Tumors of the Urinary Tract

Hypernephroma or renal cell carcinoma has generally been considered unresponsive to almost any mode of therapy and it is known to be highly resistant to radiation. Bloom and Wallace¹² in London have produced evidence that some of these tumors respond to either testosterone or a progesterone. There have been a small number of gratifying successes.¹³ There has also been a few reports of some responses to cyclophosphamide,¹⁴ but these have been relatively infrequent and inconsistent. Recently, we have embarked upon a study combining cyclophosphamide with either testosterone or medroxyprogesterone acetate, the former in males and the latter in females with some gratifying results. It is still too early to demonstrate a statistically significant improvement, but our impression at the present time is that the therapy has been of benefit in a small number of cases. Since testosterone stimulates erythropoiesis by the bone marrow rather than depresses it, mild polycythemia is a frequent consequence of this therapy.

Wilms' tumor or nephroblastoma is a most gratifying tumor to treat since, even in its far advanced metastatic state, significant palliation and perhaps 30 to 40% cures can be achieved. The tumor is treated with a combination of radiation therapy, dactinomycin and surgery. This has been discussed at great length in a previous issue of this journal¹⁵ and will not be recapitulated here.

Bladder cancer is most usually a transitional cell carcinoma of the bladder and is generally treated first by surgery and then by radiation therapy. When this fails, 5-FU has been employed with

variable success, depending upon the group of investigators who have used it. Responses have been reported by some groups in 10 to 15% of cases, and in others as high as 30 to 40% of cases. Recently, several groups have used a combined protocol in which radiation and 5-FU are given simultaneously.¹⁶ While the results are not dramatic with chemotherapy, they are thought to be better than were obtainable with radiation therapy alone. It is now the feeling of many oncologists that therapy of bladder tumor is worthwhile, certainly with 5-FU. Agreement is far from unanimous.

Cancer of the Lung

Lung cancer is a national tragedy. It is the number one killer of men who die of malignant disease and the increase in the number of deaths due to lung cancer is real and rising and not simply due to better records. In 1970, about 61,700 Americans will die of lung cancer, of which 51,200 will be men. This is fifteen times the incidence reported in 1930. More than half the patients with lung cancer are less than 62 years old and upon first examination, 40 to 60% are judged incurable. Even those who undergo resection may expect a surgical cure rate of less than 30%, with the overall survival rate for patients with primary lung cancer being approximately 8%. This is an improvement over 1950, when it was only 5%. The magnitude of palliative effort required is great, for it follows that 92% of all patients with lung cancer, at any stage of their diagnosis, will be dead from their disease, and the interval between diagnosis and death will depend upon the stage at which the cancer is diagnosed and the response to palliative therapy. Thus, while therapy is at present, exceedingly poor, the disease is largely preventable. In spite of public statements by supposed scientists and well meaning physicians to the contrary, the evidence is incontrovertible that cigarette smoking is the largest

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single factor predisposing to lung cancer.¹⁷ Although a higher risk of developing lung cancer does exist in those persons who mine radioactive ores, refine nickel, manufacture chromates and asbestos, it is impossible to conclude that these specific industrial products are responsible for more than a tiny fraction of the lung cancer mortality. Although a great deal is made about air pollution, the same facts apply to air pollution. It accounts for a miniscule incidence of lung cancer. Ninety percent of all cases of lung cancer are directly due to the smoking of cigarettes.

The first and best treatment for lung cancer is, of course, resection. A great deal of time and energy have been expended arguing about the best operation for lung cancer. In general, one finds that lobectomy, if at all possible, is the best procedure. Anything more radical than this usually leads to respiratory crippling, and if a more extensive operation than a lobectomy is required, the lesion is probably inoperable from the start and certainly incurable. There are, of course, exceptions, and we have seen several long term survivals (possibly cures) following pneumonectomy.

Although some attempts have been made at cure of lung cancer by radiation with doses of 5,000 to 5,500 rads, most of these have been successes in instances where surgery might have been equally successful. Only a few centers have attempted this and although their results look promising,¹⁸ the bulk of radiation therapists have been very skeptical about this. In general, radiation therapy is used for palliation of essentially incurable primary carcinoma of the lung. It is difficult to demonstrate any significant lengthening of life for the average patient treated by radiotherapy, the main survival time being in the order of eight to nine months in most series. The worthwhileness of radiotherapy in this group is difficult to document when cure or increase in life expectancy is the only criterion. The worthwhileness, however, becomes evident if alteration of the incurable patient's course from a distressing one to a more benign one is considered. In general, the more undifferentiated the primary tumor, the more likely relief may be expected. Symptoms due to extension and metastases from well differentiated adenocarcinomas are less often relieved than those due to metastases from squamous cell carcinomas, while those due to highly undifferentiated carcinomas and the so-called oat-cell carcinomas often respond dramatically to very modest doses, albeit the results may not be long-lasting. Chemotherapy for carcinoma of the lung

was among the first chemotherapy ever used in the modern era. One of the first uses of nitrogen mustard occurred at the New Haven Hospital in 1942, in treatment of carcinoma of the lung with a striking success.¹⁹ Unfortunately, subsequent experience with the drug in this tumor has been less exciting. None the less, the standard chemotherapy for carcinoma of the lung remains 0.4 mgs. per kilogram of nitrogen mustard in a single i.v. dose. This will induce remissions of one or two months and when repeated, sometimes gives a prolongation out to three months. The procedure is very toxic and debilitating and causes a great deal of nausea, vomiting and discomfort. It seems to be particularly efficacious in patients with squamous cell type carcinoma.²⁰

Cyclophosphamide is a newer substitute for nitrogen mustard, providing similar benefits with somewhat milder toxic effects on the marrow and less gastric discomfort. In addition, it may be given orally as well as by the intravenous route and it can be given in incremental doses without sustained toxicity. Some authors have advocated its use in all symptomatic cases, regardless of histological type.²¹ Various clinicians have different preferred schedules and no accepted schedule has appeared comparable to that already indicated for nitrogen mustard. The major drawbacks of the use of cyclophosphamide are a temporary alopecia in about half of those patients treated, and a hemorrhagic cystitis in 5 to 15% of patients. Accordingly, some clinicians tend to use chlorambucil as the oral alkylating agent of choice, particularly in women. It tends to produce very little alopecia. However, in one study, it was reported that cyclophosphamide seems to be particularly good in the treatment of the small cell undifferentiated (oat-cell type) carcinoma.²⁰ When the alkylating agents are no longer producing a response, vinblastine (velban®) is useful in producing a response in about ten percent of cases. Survival in lung cancer is often determined more by the extent and nature of the metastases than by the primary tumor itself.

Recurrent pleural effusion in bronchogenic carcinoma is a frequent and disabling problem to the patient and does not often yield to radiation therapy alone. Nitrogen mustard administered by the intrapleural route is helpful in about 75% of cases following a thoracentesis.²² The dose injected is essentially the same as that used intravenously, 0.4 mgs. per kilogram and this is essentially totally absorbed, producing a marked systemic effect. When this drug is used by this route, no other marrow

suppressant drug should be used at the same time. In patients who have a marrow already suppressed, quinacrine (atabrine) has recently been shown to control the effusions by direct intracavitary injection without bone marrow suppression. A test dose of 50 mgs. is given, followed by four daily doses of 200 mgs. each, if there is no reaction such as with high fever. More recently, some groups have been testing the intrapleural injection of tetracycline for the same purpose. A common calamity in the evolution of lung cancer is a metastasis to the brain. This is seldom responsive to chemotherapy, but the brain swelling can be reduced by large doses of corticosteroids. This has generally been followed by whole brain radiation.

From the above comments, it can be appreciated that lung cancer is essentially a difficult malignancy to treat at best and yet, is largely a preventable malignancy, which could be reduced to ten percent of the current incidence by simply ceasing to smoke cigarettes. The physician's role in the prevention of this disastrous malignancy should be to encourage all of his patients to stop smoking or just never to start smoking.

Hodgkin's Disease and Malignant Lymphoma

Hodgkin's disease is a most important malignancy because it attacks many young people as well as older individuals and because it is frequently curable if diagnosed early enough and treated aggressively enough. It is a great tragedy to see many patients who were diagnosed early by their physicians and yet were not referred for therapy because of the physician's mistaken and outmoded idea that Hodgkin's disease is untreatable. Although responses in lymphoma have not been as gratifying, this disorder is also quite treatable although less frequently, curable. This subject was reviewed in depth in this journal several years ago²³ and, therefore, we will restrict our comments primarily to newer developments.

Our current understanding of therapy in Hodgkin's disease is based upon a careful staging of the disorder and therapy follows from this staging. An international committee has finally agreed on the following definitions:²⁴

Stage 1. Disease limited to one anatomic region or two contiguous anatomic regions on the same side of the diaphragm.

Stage 2. Disease in more than two anatomic regions or in two non-contiguous regions on the same side of the diaphragm.

Stage 3. Disease on both sides of the diaphragm, but not extending beyond the involvement of lymph nodes, spleen, and/or Waldeyer's ring.

Stage 4. Involvement of the bone marrow, lung parenchyma, pleura, liver, bone, skin, kidneys, gastrointestinal tract, or any tissue or organ in addition to lymph nodes, spleen, or Waldeyer's ring.

All stages will be subclassified as "A" or "B" to indicate the absence or presence, respectively, of systemic symptoms. The following documented symptoms, otherwise unexplained, are significant:

(A) Fever

(B) Night sweats

(C) Pruritus.

In general, all patients in Stage 1 and 2 should be treated by radiation therapy. Essentially all patients in Stage 1 should be cured by radiation therapy if given in sufficient dosage. About 90 to 95% of patients in Stage 2 should be cured by adequate super-voltage radiation therapy. In general, patients in Stage 3 and Stage 4 should be given chemotherapy. However, there is at present, a combined co-operative study to determine whether patients in Stage 3A can, in fact, be cured by radiation therapy. We have advised several patients to enter this study with the hopes of achieving a cure, but it must be made clear to the patient and his family that this, in fact, is an experimental procedure. Certainly, all the patients in Stage 3B and Stage 4 should receive palliation with chemotherapy. The results are often excellent for a fairly long period of time.

Chemotherapy has centered around the use of four major groups of drugs. These are usually given sequentially, although experiments are underway to determine whether palliation is better and more prolonged by using several drugs at the same time. The latter approach looks promising, but is still experimental. The more usual treatment is to begin with an alkylating agent, either nitrogen mustard or cyclophosphamide or chlorambucil. The best and most prolonged results are achieved with these drugs and average about one year, but sometimes can go much longer. When the alkylating agents are no longer effective, then one of the vinca alkaloids is used. For Hodgkin's disease, this is most usually vinblastine (Velban®) and for lymphoma, it is most usually vincristine (Oncovin®), but these are not hard and fast rules. The remission induced by these intravenous vinca alkaloids may last many months. The third agent that is used is oral

methyl hydrazine, now commercially available as Matulan.[®] Experience now indicates that several additional months of remission can usually be obtained with this drug in most cases. Finally, one may go on to the corticosteroids, such as prednisone, in moderately high dosage to give a fourth although very short remission, usually two weeks to two months.

Reticulum cell sarcoma falls into the general group of lymphoma and is treated in essentially the same manner. Unfortunately, responses with this tumor are not as good or as long as with Hodgkin's disease. Accordingly, oncologists are more prone to use combination chemotherapy in this disorder and some groups are combining an alkylating agent with vinca alkaloid and prednisone, and even adding an antimetabolite such as methotrexate. However, all of this is part of a careful experimental protocol.

Leukemia

The leukemias can, in general, be divided up into six groups on an acute and chronic basis and by cell type, lymphocytic, myelocytic and monocytic. In actual practice, this reduces to really four groups when one considers it from the therapeutic viewpoint, since acute lymphocytic leukemia is essentially a disease of children and acute myelocytic and acute monocytic leukemia are diseases of adults and are handled in exactly the same way. Chronic lymphocytic leukemia is a disorder of elderly people, as is chronic myelocytic leukemia. Chronic monocytic leukemia is so extremely rare that no one has very much experience with its therapy and, therefore, we will omit it from discussion.

As with all the malignancies already mentioned, the comments made have been necessarily brief, because we believe that all these disorders should be treated by an oncologist experienced in this area of therapy. In addition, recent advances in leukemia therapy were reviewed a few years ago in this journal.²⁵ The field has become such that someone who is not doing it all the time naturally cannot do it with the expertise of one who devotes his full time and efforts to this. Acute lymphocytic leukemia is a disorder of childhood, which is usually fatal. It used to be fatal in an average of three months, whereas today, life can be extended to 13 or 18 months or more. Induction of remission is attempted with vincristine and prednisone and is successful in approximately 90% of cases. Recently, the experimental drug, asparaginase has also been used with similar success. Following the induction

of a remission, the maintenance drugs are used in an attempt to keep the remission going for as long as possible. The major drugs used for this are methotrexate and 6-mercaptopurine. When relapse occurs, usually an attempt is made to induce a second remission and then a second maintenance of that remission. Although prolongation of life beyond two years is not common, there have been a few cases, perhaps a hundred, that have been maintained for more than 5 years, and a handful to more than 10 years.

Acute myelocytic leukemia is generally a disease of adults and far more difficult to treat and with results that are nowhere near as good. Standard therapy has been with 6-mercaptopurine with about 15% responses. More recently, daunomycin, a new experimental drug from Italy and France, has been used with some success, but it is extremely toxic. There have also been some favorable reports with the use of cytarabine which is the biochemical cytosine arabinoside (Cytosar[®]), and also a small percentage of cases with cyclophosphamide. A few cases have been treated with asparaginase, but the responses, when obtained, have been of very short duration. In view of the generally poor results, a great number of experimental protocols are being investigated with all of the aforementioned drugs plus methotrexate and thioguanine. A combination of cytarabine and thioguanine has given remission in 65% of cases in a small series and several groups are very excited about this as a major breakthrough toward possible cures of this disease. These drugs are being used in a variety of combinations and permutations, but all of this is, thus far, quite experimental.

Chronic lymphocytic leukemia is a disease usually of the aged and was mistakenly thought to be so benign that the patient was not treated except for complications of the disease. We now realize that this is true of only a small portion of patients with this disease and now we treat most of them with either chlorambucil or cyclophosphamide. The most frequent complication is a hemolytic anemia which should be treated with corticosteroids.

Chronic myelocytic leukemia is also a disease of middle and older age adults and, in general, has been treated most successfully with busulfan (Myleran[®]). It has also been treated with 6-mercaptopurine, thioguanine, pipobroman (Vercyte[®]) and hydroxyurea (Hydrea[®]) with fairly good results. At some centers, radioactive phosphorous is also used intravenously, but in recent years, this has lost its popularity, as has demecolcine (Colcemide[®]).

Multiple Myeloma

The plasma cell tumors, in general, and multiple myeloma, in particular, have been resistant to therapy for a long time. Recently, some very promising results have been obtained with both cyclophosphamide and with melphalan. In our own series, there have been several striking responses to cyclophosphamide, the drug which we prefer because of the lessened toxicity previously mentioned. Healing of pathological fractures has been observed as well as reduction in abnormal globulins. Totally bedridden patients have been able to walk again and become self-sufficient. This formerly neglected diseases should now be treated in all cases.

Soft Tissue Sarcomas

A variety of sarcomas including leiomyosarcoma, rhabdomyosarcoma, liposarcoma, hemangiopericytoma, and chondrosarcoma have all been generally regarded as totally untreatable by chemotherapy. Since, in general, all these tumors are relatively radiation resistant as well, the outlook in all cases has been quite dismal. Recently, combination chemotherapy has proven to be quite beneficial in some cases.²⁶ Therapy is attempted with a variety of standard drugs used in combination, such as dactinomycin, cyclophosphamide, methotrexate, vincristine and prednisone. The toxicity of each of these drugs is well known and the toxicity of the combination can be extremely severe, but if they are combined and given skillfully, this can be minimized. Several patients have recently been treated by us with some or all of these drugs with very gratifying results. It is now recommended that these formerly neglected malignancies be given an attempt with chemotherapy, particularly if the patient is referred early enough to derive some benefit from a response to the chemotherapeutic procedure.

Spontaneous Regression of Cancer

Almost every surgeon or clinician can cite one case that he has seen within his experience of a patient with a known widespread malignancy which has been thought to be terminal, who has done well for many years. In fact, some clinicians have suggested that they have seen enough such cases that they feel that any case of malignancy that cannot be improved by surgery, should not be sent for radiation or chemotherapy. To evaluate just this question, Everson and Cole reviewed the entire world's literature since 1900 and published their results in 1966 in a book which had the title,

"Spontaneous Regression of Cancer" (Saunders Co.). They found, to their satisfaction, that there were 176 cases of possible spontaneous regression of cancer that could be documented. For documentation, they insisted on a histological diagnosis of cancer and some other criterion of spread. In most cases, this other criterion of spread was a shadow on chest X-ray and the criterion for regression was the disappearance of this shadow. It is worthwhile to note that of these 176 cases, 31 cases were of hypernephroma and 29 were of neuroblastoma. There were 19 each of malignant melanoma and of choriocarcinoma, but only 13 cases of bladder cancer and 11 cases of soft tissue sarcoma. All other tumors represented less than 10 cases in the entire world's literature in the preceding 66 years. Thus, one is frequently challenged with the idea that perhaps the metastatic breast cancer should not be treated as, after all, everyone has seen some that regressed spontaneously. However, in searching the world literature, Everson and Cole found only 6 such cases. They found 7 regressions each of testis, ovary and colo-rectal malignancies and 8 of sarcoma of bone. Any other tumor had less than 5 spontaneous regressions in the world's literature of the preceding 66 years. Many of these cases were only followed for a brief time beyond their initial diagnosis and may have recurred at a later time. Some cases died of other causes after a short time and were listed as spontaneous regressions because there was evidence of tumor shrinkage, but they might have recurred if followed for a longer period of time.

Thus, although it is beyond doubt that metastatic malignancies have regressed spontaneously, the incidence of regression is approximately one case in 100,000. Accordingly, this is hardly a reason to deny a patient with metastatic malignancy the benefits of palliation by whatever mode available.

Conclusions

Chemotherapy has now become of age. It promises great advances in the near and distant future. However, at the present time, it offers a great deal of palliation in terms of reduction of pain and improvement of the quality of survival to a great many patients with far advanced malignancy. As we have indicated, chemotherapy should be provided in all advanced cases of carcinoma of the female breast, in adenocarcinoma of the colon and rectum and, certainly, in cases of Hodgkin's disease for which radiation therapy will not be adequate. In addition, very promising results may be obtained

in carcinoma of the ovary and for a time, in acute lymphocytic leukemia and in the chronic leukemias. The results are certainly less satisfying, but definitely worthwhile, in carcinomas of the upper gastrointestinal tract, including those of the stomach, pancreas, small intestine and liver, as well as tumors of the bladder and undifferentiated carcinomas of the lung. In general, results are most disappointing with bronchogenic carcinomas of the lung, hypernephromas, carcinoma of the cervix, soft tissue sarcomas and acute myelocytic leukemia, as they generally do not give very satisfying responses. However, in some cases, good palliation can be obtained and although the incidence is low, it is very often worth a try, particularly when the cases are seen early. Carcinoma of the prostate and endometrium are best treated by hormonal therapy, but when this is no longer successful, then chemotherapy can sometimes add additional palliation. In a few cases, it may even prolong life for a period of time.

Whenever a patient with disseminated or unresectable malignancy is encountered, the individual should be referred to an oncologist for evaluation and possible palliative therapy with either radiation or chemotherapy. In many cases, a combination of both will offer the best results, but certainly, no patient should be given up as untreatable or consigned simply to treatment with narcotics without an attempt being made to give that patient the benefits of the more modern development available for patients with advanced malignancy. The discussions of each of the various conditions enumerated have been necessarily brief since no attempt is made to convey to the reader the details of therapy. Such an appreciation can only come with much time devoted to the study of chemotherapy and the use of these very potent, dangerous, but terribly useful drugs. The plea is made that physicians understand what is available from some of their colleagues who have made a special study of this field so that the patient may be referred early for the best possible results. In each and every case, undoubtedly, the oncologist will work closely with the referring physician to yield as much benefit as possible to the patient and keep him rehabilitated and in functioning condition for as long as possible with the best possible psychological outlook.

In the final analysis, caring for the patient will also mean caring for his family and arranging for community resources and facilities to aid in this

care. The American Cancer Society, through its local units, will often provide appliances, transportation and even some financial assistance. The visiting nurse associations will help with nursing care, injections and supervision of colostomy care. Counselling and psychological support are often available through many social and religious organizations as well as the patient's own clergyman. The care of the cancer patient is most effective when it is a team effort organized and supervised by his physician.

(This is the second of a series of two articles)

(Reprints: 111 Park St., New Haven, Conn. 06511)

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Medical Grand Rounds At Yale-New Haven Hospital

Malaria

Frederick Lee Sachs, M.D. and John Forrest, M.D. Editors
Pamela Brooten, Assistant Editor

DR. JOHN FORREST:

Malaria is one of the few consequences of the war in Vietnam which is easily cured. The Vietnamese are among the 640 million people of the world for whom malaria is still endemic, and with the rapid military transport of this war we have brought the problem home. The medical service of the West Haven Veterans Administration Hospital treated a single case of malaria in 1966, two in 1967 and six in 1968. During 1969, 14 patients with malaria were admitted, bringing our recent experience to 23 cases. While this experience is modest, the increase in cases is similar to that reported nationally. Data from the National Communicable Disease Control Center in Atlanta, Georgia, indicates that before 1965 less than 50 cases were reported annually from all states. There was a marked increase in the number of cases in 1966 and 1967, approaching 3,000 cases per year. In the first eleven months of 1969, more than 3,400 cases were reported.

Of the 23 recent cases of malaria seen at the West Haven Veterans Administration Hospital, 16, (70%) have been caused by *Plasmodium Vivax*, four by *Plasmodium falciparum*, one case was a mixed infection and in two cases the diagnosis was uncertain. No cases of *P. malaria* or *P. ovale* have been seen, since these species are not found in Vietnam.

Six relapses occurred in four patients. The first patient received standard chloroquine-primi-quine therapy while hospitalized for vivax malaria and appeared cured, only to return three months later with a relapse in symptoms. *Plasmodium vivax* was again seen on smear and chloroquine and primi-quine were administered in the normal dose schedule of 7 and 14 days courses respectively. The patient responded satisfactorily and has remained

well. The second patient received a course of chloroquine-primi-quine for presumed *P. Vivax* but returned one month later with *P. Falciparum* on smear. The third patient was admitted with vivax and given chloroquine-primi-quine for seven days in the hospital and seven days as an outpatient. He returned three months later with another episode of vivax malaria and it was felt that he had not taken his primi-quine faithfully while an outpatient. On the second admission, he was hospitalized for the entire period of chemotherapy but returned four months later with a third relapse of vivax infection. The fourth patient was diagnosed as having a *falciparum* infection, returned two months later with Vivax and again eight months later with another episode of Vivax. On his first episode of Vivax, primi-quine was withheld because of documented glucose-6-phosphate-dehydrogenase (G-6-P-D-) deficiency. By the time he returned with his second episode of Vivax, we had accumulated more experience in treating patients with G-6-P-D deficiency with primi-quine and the patient was cured.

There have been two severe hemolytic episodes in patients with G-6-P-D deficiency. One reaction occurred in a patient on dapsone. He was a soldier who had been taking chloroquine-primi-quine prophylaxis while in Vietnam. When dapsone was added during the course of a malarial infection, he developed anemia, jaundice and dark urine. When the dapsone was discontinued the hemolysis stopped. Another patient was given primi-quine for Vivax malaria. He had known G-6-P-D deficiency and developed a severe hemolytic reaction. One patient developed severe pancytopenia on Daraprim. Another patient developed post-transfusion hepatitis after being transfused for a hemolytic reaction. The most critically ill patient presented with seizures and coma, secondary to cerebral malaria. He was treated with intravenous quinine and was completely cured. In summary, there have been 11 complications or relapses in 8 patients, an incidence of

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33%. One of the patients with rather unusual complications will be presented by Dr. Rice.

DR. PETER RICE: The patient was a 22-year-old Negro serviceman who presented in Vietnam in April of 1968 with chills and fever. A diagnosis of malaria was made and he was begun on chloroquine-primiquine therapy. Dapsone was also instituted. He did well and returned to the United States but was readmitted with fever, chills and right upper quadrant pain in June of 1968. This time he stated that he had taken his malaria prophylaxis on an irregular basis. On physical examination his liver was tender and could be felt 4 cm. below the right costal margin. The spleen was not palpable and there was no lymphadenopathy. His peripheral smear was consistent with plasmodium *vivax*. He was immediately begun on chloroquine, primiquine and Dapsone. On the second day he had another episode of chills and fever and his hematocrit dropped from 44% to 37%. On the third day his hematocrit was 18% and he passed black urine. A G-6-P-D test done that day was markedly positive. Primiquine was discontinued and he was transfused with two units of packed red cells. He responded well to transfusion and a brisk reticulocytosis ensued. On the ninth day it was elected to restart the primiquine and he had no ill effects from the reinstitution of this drug. On the fourteenth day he was discharged and followed as an out-patient. In September of 1968, three months after his hospitalization and transfusion he developed anorexia, nausea and weight loss, associated with a tender liver and elevated SGOT. He was once again admitted with a diagnosis of serum hepatitis. He was hospitalized from September, 1968, to March, 1969, with persistently elevated SGOT's. Liver biopsy revealed mild hepatitis but no evidence of subacute hepatic necrosis. He was discharged after several weeks and he is currently followed in the out-patient clinic.

DR. JOHN FORREST: We are fortunate to have with us Dr. Wilbur Downs, Head of the Arbor Virus Section of the School of Epidemiology, who will speak on the epidemiology of malaria.

DR. WILBUR DOWNS: Malaria has been a historical military disease. In World War I, malaria was widespread among troops taking part in the Gallipoli campaign. Practically all British and Turkish troops were affected. In World War II, malaria was rampant in areas such as the Solomon Islands and New Guinea. An example of how serious the epidemic was is demonstrated by the fact

that when the troops were sent to the Russell Islands, they stopped on Guadalcanal for one night. In the epidemic that followed this one night exposure in a malaria-infested area, 8,000 cases of malaria were reported. In an experiment in which we were testing the efficacy of malaria prophylaxis, one division was taken off their medication. Soon after, 14,000 cases of malaria developed in these men. Only 15 men in the entire division escaped the disease.

In Vietnam, the situation is much different. There is a great deal of water in the lowland areas around the Mekong Delta and other rice-growing areas. Anopheles mosquitoes are found in abundance in these areas. One would therefore think that these are the areas in which malaria would be most prevalent. However, this has not been the case and troops stationed in lowland areas have had virtually no problem with malaria. The vector in Vietnam is an agent which grows in the margins of clear, flowing, hilly streams in the upland country. It is in the uplands that the military has been conducting the majority of its search and destroy operations. In Vietnam, therefore, malaria is a disease of the foot soldier. The rates in some patrol units are almost 66% in soldiers exposed while on patrol for two to three days.

For the first time, we have now encountered malaria which is resistant to accepted modes of therapy. There is a strain of *P. falciparum* malaria found in Vietnam, Thailand, Cambodia and parts of Malaya which has proved resistant. This posed a serious threat, both to the individual, because it threatens his life, and to the military, because it endangers the success of large-scale operations. As a result of this development, the Army has launched a major effort aimed at discovering new anti-malarials. Doctor Thornton will comment upon this in just a few moments.

I would like to point out one important facet of the clinical aspects of malaria in patients with previously diagnosed malarial infections. Very often patients with a known history of malaria develop fever and chills and the question arises as to whether this indicates a relapse. It has been shown that patients with a history of several previous relapses become tolerant of the parasite so that it takes a higher degree of parasitemia to produce symptoms with each successive relapse. Therefore, when faced with a patient with a history of malarial relapses, one should be able to find the parasite on examination of stained smears. A corollary of this is that if he does not have parasites on smear,

he does not have malaria. Finally, I should just like to emphasize that the diagnosis is often missed because it is not thought of. It is easy to miss malarial forms on a peripheral smear if one only looks at the white cells and does not pay attention to the red cell forms.

DR. JOHN FORREST: Dr. George Thornton will discuss the chemotherapy of malaria.

DR. GEORGE THORNTON: There are four classes of drugs commonly employed at the present time in treatment of malaria. The first and most important are the quinoline derivatives of which there are three subgroups. The most famous subgroup is, of course, the cinchona alkaloids, including quinine, which is unique in its structure and activity.

However, by far the mainstays in the modern treatment of malaria are the four amino quinoline drugs. Chloroquine is the agent most commonly employed by physicians trained in the United States. Amodiaquine is another drug in this group and is equally effective. The third subgroup is the 8 aminoquinoline derivatives. Atabrine and primaquine belong in this group.

The mechanism or action of these antimalarials is not well understood but all of the quinoline derivatives appear to combine with DNA to inhibit reduplication and also to inhibit the transcription of RNA. In addition, the quinoline derivatives seem to interfere with a variety of metabolic processes, particularly carbohydrate metabolism. It is best to consider these drugs as general protoplasmic poisons which interfere in different ways with the metabolism of the parasite. In general, when resistance develops to one of these agents, resistance develops to all.

The second and third major groups of antimalarials are those that interfere with the metabolism of folic acid. One group is the paraminobenzoic acid antagonists. As you know, folic acid is an important requirement for many biologic systems. In general, all organisms must meet their folic acid requirements in either of two ways: either they must use pre-formed folic acid or folinic acid, as in the case of man, or they must manufacture folic acid themselves as in the case of the Plasmodia and bacteria. The sulfonamides and their close relatives, the sulfones, are competitive antagonists for paraminobenzoic acid and are very effective, albeit slow, in the management of patients with malaria.

The third group of anti-malarials are those which interfere with the reduction of folic acid to folinic

acid. These are the folic acid reductase inhibitors of which pyrimethamine is the classic example.

Finally, colchicine has also been used in the management of patients with malaria. Its mechanism of action is poorly understood but seems to interfere with recycling of tetrahydrofolate.

Since the paraminobenzoic acid antagonists and the inhibitors of folic acid reductase act at different points in the sequential metabolism of folic acid, it would be anticipated that there would be synergism with the use of these drugs. Indeed, synergism can be demonstrated between agents of these two groups.

Other aspects which determine the usefulness of antimalarials include: the species of parasite, the pharmacokinetics of the drug (the rapidity of absorption, the tissues it enters, and how rapidly it is eliminated) and, finally, the growth rate and stage of development of the parasite. Unfortunately, there are no *in vitro* systems for testing these drugs. *In vivo* studies must provide all the experimental data for malaria chemotherapy.

All of this has led to a rational approach to the therapy of malaria. For infections due to *P. vivax*, *P. ovale* and *P. malariae*, none of which have been shown to develop resistance to the quinoline derivatives, one uses two agents; chloroquine and primaquine. Although both drugs are used, this is not an attempt at synergism since these are agents belonging to the same general class (quinoline derivatives). Chloroquine is effective against the parasitized erythrocyte. Primaquine is effective in the exoerythrocytic or tissue phase of the disease. Apparently primaquine penetrates well into the exoerythrocytic cells whereas chloroquine penetrates poorly. The exoerythrocytic forms of the parasite also seem more sensitive to the 8 aminoquinoline drugs than to the 4 aminoquinoline group.

When treating malaria with chloroquine, one has to follow the same principles as in digitalization of a patient. You must "chloroquinize" him in order to saturate all potential tissue receptor sites. This is done in the following fashion: 600 mg. of chloroquine base is given at the time of diagnosis and then six hours later an additional 300 mg. is given. On each of the next two days, 300 mg. of base is also given. This adds up to 1500 mg. of base over a three day period. In addition, 15 mg. of primaquine base is given daily for a 14-day period (Table 1). I would stress that these doses are in the form of base. The most common problem in medication error occurs because the drugs are all available as salts. For example, chloroquine is available in two

TABLE 1
DRUG THERAPY OF MALARIA

Vivax, ovale, and malariae		
1. Chloroquine	600 mg. base	Stat
	300 mg. base	In 6 hours
	300 mg. base	Daily for 2 days
Total	1500 mg. base	
2. Primaquine	15 mg. base	Daily for 14 days
Falciparum		
1. Quinine sulfate	650 mg.	Every 8 hours for 14 days
2. Pyrimethamine	25 mg.	Every 12 hours for first 3 days
3. Diphenyldiamino sulfone	25 mg.	Daily for 28 days

forms. Chloroquine phosphate is the oral preparation. In the rare malaria patient in whom gastrointestinal complaints are severe or in patients whose toxemia is so pronounced that oral intake is impossible, one can give chloroquine in the intramuscular form as chloroquine hydrochloride. With chloroquine phosphate, 300 mg. of base equals 500 mg. of the salt. With chloroquine hydrochloride, 300 mg. of the base equals 375 mg. of the salt. Primiquine is only available as the phosphate. 15 mg. of primiquine equals 26.3 mg. of salt (Table 2).

TABLE 2
BASE EQUIVALENT—ANTIMALARIALS

	Base	Salt
Chloroquine phosphate (p.o.)	300 mg.	500 mg.
Chloroquine hydrochloride (i.m.)	300 mg.	375 mg.
Primaquine phosphate (p.o.)	15 mg.	26.3 mg.

The problem of chloroquine-resistant falciparum malaria is a major one in South East Asia. It is indeed fortunate that although many strains of *P. falciparum* are resistant to chloroquine, some sensitivity to quinine has been retained. However, large doses of quinine over a long period of time are required. Unlike vivax malaria, where we rarely see fever after the second day and never after the third day, it often takes five to seven days to see a response in falciparum malaria. In addition, if quinine is used alone, about 50% of patients will relapse. However, by combining quinine therapy with agents of different classes, such as a paramino-benzoic acid antagonist and also a folic acid reductase inhibitor, one can achieve very good results. The treatment schedule currently employed for falciparum malaria is 600 mg. of quinine sulfate given every eight hours for 14 days orally or intravenously. Pyrimethamine, the folic acid reductase inhibitor, is given in a dose of 25 mg. every 12

hours for three days. In addition, 25 mg. daily of the sulfone, Dapsone, is administered over a 28 day period. This regimen gives a radical cure in between 90 and 95% of cases of falciparum malaria.

Since 1966 when the resurgence of malaria developing in the continental United States was first noted, there have been 20 fatalities. All have been cases of falciparum malaria. Veterans Administration Hospitals and military hospitals reported 1,218 cases of falciparum malaria with four deaths for a mortality of 0.3%, quite an acceptable figure considering the severity of the disease. In addition, three of the four deaths occurred in patients with fulminant disease who succumbed despite vigorous therapy and prompt diagnosis.

Private hospitals and United States Public Health Service hospitals reported 206 cases of falciparum malaria with 16 deaths for a mortality of over 7%. Three of these patients refused all medical care on religious grounds. However, in two instances the diagnosis was not established antemortum and in all others diagnosis was delayed for from one to eight days. In all patients in whom peripheral blood smears were available before diagnosis, all had easily demonstrable parasites on review, emphasizing the point made earlier by Dr. Downs. In civilian hospitals, the poor response seems to be a function of late diagnosis and inadequate therapy.

For the clinician, the only important thing to decide is whether or not the patient has falciparum malaria. The gametocyte is the only way to unequivocally establish the diagnosis. The crescent-shaped gametocyte is characteristic of *P. falciparum*. Other helpful guides are summarized in Table 3.

TABLE 3
MORPHOLOGY—FALCIPARUM MALARIA

	Falciparum	Non-falciparum
Red cell size	Normal	Often enlarged
Parasitemia	Usually numerous	Mild
Multiple Red Cell Infections	Often	Rare
Double Chromatin Dot	Often	—
Forms Other Than Ring	Rare	Often
Size of Ring	About 1/5 REC	About 1/3 RBC
Gametocyte	Crescent	Round

Finally, I should like to comment upon a frequently asked question. Why not treat everyone with a combination of quinine, pyrimethamine and Dapsone? The answer is that the dose of quinine and pyrimethamine are very close to the toxic level. In addition, the response of *P. vivax* infections to quinine is extremely slow.

DR. PHILIP K. BONDY: Have there been any secondary cases in the non-military population as a result of the influx of returning servicemen?

DR. DOWNS: We have about 6 to 8 cases yearly in this country where the United States Public Health Service discovers they are true secondary cases, that is, the disease was transmitted by the bite of an American *Anopheles* mosquito. Usually a Vietnam returnee or missionary is the index case.

DR. BONDY: Is it likely that we will see an epidemic of malaria as the number of returning servicemen increases?

DR. DOWNS: No, because we are alert to the danger and take proper steps whenever a secondary case occurs.

DR. FORREST: The Communicable Disease Control Center stated that they had compiled a list of seven introduced cases in 1968 and just two in 1969, all associated with military bases.

DR. MICHAEL WIENIR: What therapy do you advocate in mixed infections?

DR. THORNTON: In general, mixed infections are hard to diagnose because one of the two species usually predominates. I think that the West Haven patient previously mentioned who presented with *P. vivax* and returned with *P. falciparum* is an example, not of mis-diagnosis but of mixed infection with one organism becoming dominant. The incubation period for *falciparum* malaria is relatively short so that in general if you have a patient who presents with *falciparum* malaria and his infection is controlled, it is wise to continue or to reinstitute chloroquine-primiquine suppressant therapy. The standard regimen for suppressant therapy in Vietnam for personnel not in the Central Highlands is one chloroquine-primiquine tablet containing 300 mg. of chloroquine base and 45 mg. primiquine base weekly. The prophylaxis is continued for eight weeks after leaving an endemic area. This regimen is quite effective and will prevent malaria in about 95% of cases. In people from the Central Highlands, Dapsone in a dose of 25 mg. daily is added and continued for four weeks after leaving the area. However, recent studies show that 70% of military personnel are given inadequate therapy either because they don't take it or because it is unavailable. It has been our experience at the Veterans Administration Hospital that most of the patients have not had the prescribed prophylactic regimen. We routinely place a person with treated *falciparum* malaria on chloroquine

and primiquine once a week for eight weeks. We do not usually treat cured *vivax* with *falciparum* prophylaxis, however, because the development of *falciparum* following *vivax* infestation is uncommon.

DR. FORREST: We have seen several malaria patients with G-6-P-D deficiency at our hospital. I have asked Dr. Papac if she would comment on the well described resistance to malaria in G-6-P-D patients.

DR. PAPAC: We reviewed this when we had our first patient and it turns out that the original work was based on epidemiology studies by Motulsky, mostly in Nigeria, demonstrating that children who had glucose-6-phosphate-dehydrogenase deficiency had less parasitemia and a decreased incidence of malaria. This has been challenged recently by studies done in South East Asia and East Africa. In recent years there have been different phenotypic variants of the enzymes described and now there are 50 different variants recognized.

In general they fall into several types, Negro, Mediterranean and a Greek variant. There are both qualitative and quantitative differences in the enzymes. The negro variant appears to be the only phenotype which may have protection against malaria, correlating with the degree of parasitemia, but this work is not well established and there has not been a significant number of patients studied. There is at least a theoretical basis for malarial protection and that is that apparently the malaria parasite has a significant requirement for reduced glutathione which would not be present in a high concentration in patients who have the enzyme deficiency. Another aspect is that the American negroes who have considerable admixture of caucasian blood do not frequently possess the caucasian enzyme. The group at Baltimore studied 120 negroes and I think they only found one or two with a caucasian type of G-6-P-D enzyme.

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Anesthesiology Grand Rounds

Yale-New Haven Hospital

Myocardial Infarction in Surgical Patients

Samuel M. Lerner, M.D. and Frederick W. Hehre, M.D., Editors
Jakub Goldstein, M.D. and Benedict R. Harris, M.D., Discussants

Dr. Jakub Goldstein:

A 60 year old white male was admitted from the Emergency Room to the Coronary Care Unit with a diagnosis of myocardial infarction after a 10 day history of parasternal chest pain radiating to the right scapula. On admission his pain was substernal and he was pale and diaphoretic. Electrocardiogram on admission showed deep T wave inversion on leads I, AVL, V₅ and V₆ and deep Q waves in leads I, and AVL. The presumptive diagnosis of anterolateral myocardial infarction was subsequently confirmed by enzyme studies and serial cardiograms read as "evolving anterolateral myocardial infarction". He had been seen in the Emergency Room ten days previously with the less severe pain and T wave inversion in AVL. Biliary tract disease was considered but enzymes and gallbladder series were reported as normal.

Physical examination revealed an obese, white male with pulse rate 84, and blood pressure 170/90 mmHg. The neck veins were flat. Auscultation revealed scattered basilar rales, and a grade I/VI systolic murmur heard at the left sternal border. The remainder of the physical examination was non-contributory.

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Shortly after admission, the patient developed atrial flutter-fibrillation which was effectively treated with digitalis and quinidine. On the 14th hospital day, his temperature rose to 105°F. Blood, urine and sputum cultures, and chest film were negative. On the 20th hospital day the patient became jaundiced. Liver function tests were consistent with the diagnosis of acute cholangitis. Despite therapy with oxacillin and kanamycin, his jaundice increased and his hematocrit fell to 26%. He was given vitamin K and 2 units of packed erythrocytes. On the 24th hospital day, 4 weeks after his initial infarct, surgery was adjudged to be imperative despite his infarct, and the patient underwent abdominal exploration under general anesthesia. It was elected to use a nitrous oxide-relaxant technique because other inhalation agents might have cardiac depressant or irritant properties.

The patient was brought to the operating room without premedication. His blood pressure was 120/70 mmHg, pulse rate 90. Anesthesia was induced with diazepam 10 mg and thiopental 50 mg intravenously. Curare 3 mg and succinylcholine 100 mg was administered to facilitate endotracheal intubation. Anesthesia was maintained with 55% nitrous oxide—45% oxygen mixture, curare 30 mg, and pentazocine 45 mg. No cause for the jaundice was found, and the liver was biopsied. Cholecystostomy was performed but calculi were not present in the gallbladder. Blood pressure and pulse rate were stable throughout the procedure. The curare was not reversed at the end of the 80 minute anesthetic. The patient was moved to his bed in an uncoordinated manner and his blood pressure fell to 80/60 mmHg. He was given oxygen by mask and mephentermine 15 mg intravenously. His blood pressure promptly returned to 120/70 mmHg and the patient was transferred to the intensive care unit where he was maintained on artificial ventilation until the effects of the curare dissipated. His

immediate post operative status was considered good. The liver biopsy revealed diffuse hepatitis and cholestasis of uncertain etiology, but compatible with drug reaction. Phenobarbital and quinine were considered possible offenders. All drug therapy was stopped and, he became afebrile and his jaundice disappeared.

On the 2nd post operative day he developed basilar rales, tachycardia and tachypnea, and was treated with 40% O₂ by face mask and furosemide with good results. On the 13th post operative day the patient developed cold diaphoresis and hyperventilation following an enema. Electrocardiogram showed evidence of a fresh inferior wall infarction; however, his condition stabilized promptly and gradually improved until discharge on the 58th hospital day.

Dr. Samuel M. Lerner: Dr. Harris, will you please discuss the management of the surgical patient with an acute myocardial infarction?

Dr. Benedict R. Harris: It is the preoperative responsibility of the internist or cardiologist to confirm the presence of an acute myocardial infarction, to assess the extent of the problem, and to control those factors which increase the hazards of the contemplated surgery. He is a member of the surgical team, particularly in the immediate postoperative period, appraising and managing complications. I cannot emphasize too strongly that the surgical patient with coronary artery disease, ischemic heart disease, or an acute myocardial infarction, requires the same thorough care as if he were operated upon specifically for repair of his cardiac pathology.

The cardiologist or internist must make every effort to correct or ameliorate existing abnormalities which might add to the gravity of the situation. Congestive heart failure can be helped by digitalization, salt restriction and diuretics. Sinus bradycardia, frequently associated with posterior or inferior wall infarcts, may be favorably influenced by atropine. Sinus tachycardia which seriously reduces coronary artery flow by shortening the diastolic interval, may be an expression of inadequate ventilation, anemia, hypotension, cardiogenic shock, or simply apprehension. Whatever the cause, every effort should be made to keep the heart rate below 100 and above 60 beats per minute.

Occasional premature ventricular contractions do not compromise myocardial dynamics significantly, but are possible precursors of more important ventricular arrhythmias. Ventricular tachycardia is best treated by electric cardioversion unless secondary

to digitalis intoxication. Pharmacologic conversion may be attempted by intravenous lidocaine, 50-75 mg, or procainamide 100 mg, but if sinus rhythm does not recur quickly, cardioversion should be undertaken. Supportive measures consist of sedation, oxygen, and vasopressors when hypotension is present.

Major surgery and general anesthesia impose unusual strain on the circulation, and the diseased heart is more vulnerable to strain than a normal heart. With recent acute myocardial infarction, the statistical probability of life-threatening situations during anesthesia, surgery, or the immediate post-operative period is great.

Mortality rates have been reported from 18-40% in patients suffering myocardial infarction 3 months prior to surgery. Review of these figures indicate that the extent of the operation and skill of the anesthesiologist are responsible for the variance of morbidity and mortality statistics.

The connotation of fresh infarct implies a duration of three weeks or less. I urge modification of this concept. Realistically, the acute phase should be extended to three months. It takes that long to heal the infarct, and possibly 6 months to develop effective collateral circulation in the infarcted area. This is apparent from statistical reviews of morbidity and mortality related to the time interval between an acute myocardial infarction and subsequent surgery.¹⁻³ Topkins and Artusio report a 54.5% incidence of postoperative infarction when the interval is less than 6 months.⁴ This patient had a postoperative infarction. If the interval is 6-12 months, the incidence falls to 25%. In the opinion of some cardiologists, urgent elective surgery may be considered at this time, although this is a calculated risk. If surgery is performed two to three years after the initial infarct, only 6% suffer post-operative infarction. After three years intervene the

TABLE I
MALES AGE 50 OR MORE

<i>Time Between Infarction and Operation</i>	<i>Incidence of Post-Op Infarction</i>
Less than 6 months	54.4%
More than 6 months and less than one year	25.0%
1-2 years	22.4%
2-3 years	5.9%
More than 3 years	1.0% or less

Shows the incidence of postoperative infarction with relation to the interval between preoperative infarction and subsequent surgery.

Modified from Topkins and Artusio (4).

incidence of postoperative infarction is only 1%, or, the same as one would expect in a similar population without history of infarction prior to surgery. In my own opinion, elective surgery should not be performed for at least 2 years after an infarct and preferably three.

Discussion

Dr. Lerner: Please comment on the value of the oscilloscope as a monitoring tool.

Dr. Harris: Difficulties interpreting electrocardiographic irregularities can be multiplied tenfold by watching an oscilloscope as compared with the paper tracing. One must have the opportunity of making a permanent tracing. For example, it is difficult to measure progressive prolongation of the R-R interval or progressive widening of the QRS complex on the oscilloscope until the heart block is so apparent that it is also quite obvious that the patient is in dire distress.

Dr. Lerner: How is the diagnosis of myocardial infarction in an anesthetized patient established when the usual symptoms of chest pain and weakness are absent?

Dr. Harris: Significant hypotension, sudden appearance of ventricular tachycardia, ectopic arrhythmia, or sudden onset of congestive failure are the most important indications of acute myocardial infarction in the anesthetized patient. If the electrocardiogram shows deep and wide Q waves which were not previously present, marked changes in the baseline position of the RST segment with inversion of previously upright T waves, the diagnosis is not in question.

Dr. Lerner: How would you treat a failing heart during operation?

Dr. Harris: With the judicious use of a quick-acting digitalis preparation, such as lanatoside C, and a rapid-acting diuretic, such as furosemide or ethacrynic acid.

Dr. Nicholas M. Greene: What is the incidence of coronary occlusion precipitated by anesthesia? Your slide indicates that 22% of patients with previous coronary occlusion will have another occlusion postoperatively if the surgery is performed within 2 years. What is the incidence of a second coronary occlusion within 2 years after an initial infarct in a population which did not undergo surgery?

Dr. Harris: 15-20%.

Dr. Greene: Would you comment on the value, if any, of heparin in the management of a patient

who had suffered coronary occlusion, and particularly, the reinstitution of anticoagulant therapy in the postoperative period.

Dr. Harris: In hypotensive states, particularly when there is a slowing of the venous circulation, there is a transient period of hypercoagulability. This has led to the practice of treating patients with known coronary heart disease with heparin when they are to undergo extensive surgical procedures. Isn't that the procedure for coronary bypass surgery here?

Dr. Greene: Intraoperatively, yes.

Dr. James I. Gilman: The anticoagulant is reversed at the end of the operation so that the patient does not enter the recovery room with prolonged clotting time.

Dr. Greene: Would you advocate the reinstitution of heparinization post-operatively?

Dr. Harris: No, not unless there had been significant slowing of the circulation intraoperatively which would increase the probability of intravascular thrombosis.

Dr. Gaylord H. Rockwell: Would you discuss routine preoperative digitalization of the patient with known heart disease?

Dr. Harris: Prophylactic digitalization has become increasingly popular in the last ten years, particularly in the arteriosclerotic group in which it is sometimes difficult to observe the objective signs of early congestive failure. These people may not move fast enough to get short of breath, but they do have a compromised myocardium. Routine preoperative digitalization reduces the incidence of complications. Of course, this is a double-edged sword which may result in life-threatening arrhythmias, particularly if the patient has received antihypertensive and diuretic therapy and is hypokalemic. Preoperative digitalization is also appropriate for patients with longstanding hypertensive heart disease and/or valvular damage from rheumatic fever.

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Electrocardiogram of the Month: Ventricular Fusion Beats

Yale-New Haven Hospital
New Haven, Connecticut

Prepared by
HYMAN M. CHERNOFF, M.D.
Associate Professor of Clinical Medicine,
Yale School of Medicine
Director, Dept. of Electrocardiography
Memorial Unit, Yale-New Haven Hospital

Ventricular fusion beats result when two pace-makers depolarize different portions of the two ventricles almost simultaneously. Usually one pace-maker is supraventricular in origin while the other is ventricular. On rare occasions the two pace-makers are in the ventricles. Such fusion beats may occur during the course of a number of different rhythm disorders as described and illustrated below.

1—*Fusion beats during ventricular parasystole.* If

the impulse from a ventricular parasystolic center is beginning to activate a portion of the ventricle as the supraventricular impulse is spreading through the I-V conducting system to activate other portions of the ventricles, the QRST configuration will be intermediate between that of a "pure" supraventricular complex and a "pure" parasystolic complex. (Fig. 1).

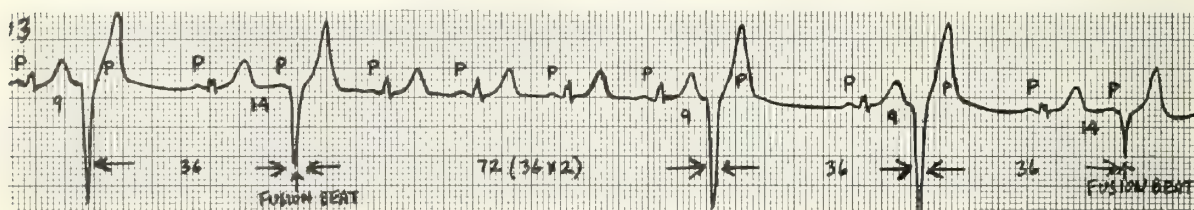


Figure 1

Five ventricular ectopic beats are present. These exhibit varied coupling intervals with the preceding sinus beats (coupling range of 9 to 14 mm.). The interectopic intervals measure 36 mm. or 72 mm. (36×2) consistent with a parasystolic ventricular center with discharge rate of approximately 42/min. The 2nd and last parasystolic beats occur immediately after a sinus P-wave and exhibit slightly different contours from the rest of the parasystolic beats, a finding consistent with a minimal degree of fusion.

2—*Fusion beats during artificial pacing of the ventricles.* A fixed rate artificial pacemaker acts in a manner similar to that of a spontaneous ventricular parasystolic pacemaker and fusion beats will occur whenever a supraventricular impulse reaches the ventricles simultaneously with the discharge of

the artificial pacemaker (Fig. 2). If the artificial pacemaker is of the demand type, fusion beats will also occur when the diastolic period between two successive spontaneously occurring beats coincides with the preset escape interval of the demand pacemaker. (Fig. 3).

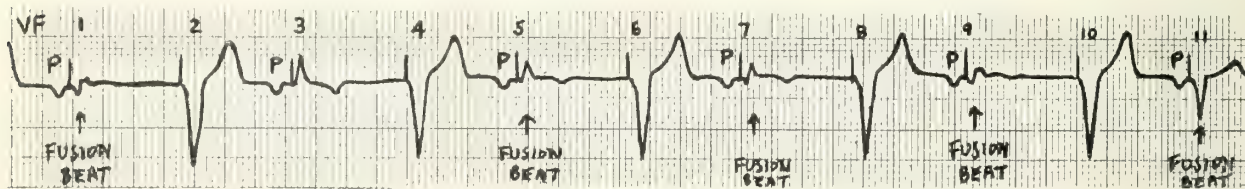


Figure 2

A fixed-rate artificial pacer is present with discharge rate of 80/min. (a stimulus artifact can be seen occurring regularly at 18.5 mm. intervals). Beats 2, 4, 6, 8, and 10 are "pure" artificially produced ventricular beats. The atria are under control of an ectopic pacemaker probably situated in the upper portion of the AV junction and has a discharge rate of approximately 42/min. (inverted P-waves occur every 37 mm.). Beat 3 in the rhythm strip results from conduction of the AV impulse to the ventricle and represents a "pure" AV capture beat. Beats 1, 5, 7, 9, and 11 are fusion beats with varying degree of fusion.

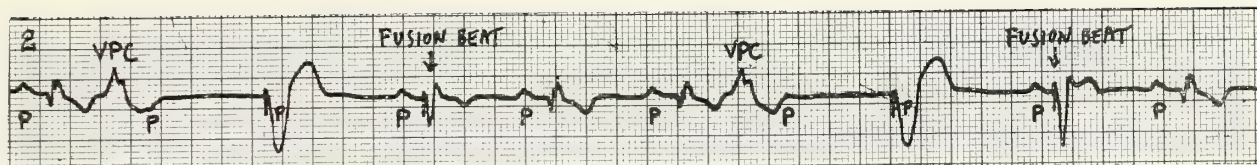


Figure 3

The basic rhythm is sinus with sinus rate of approximately 70/min. (P-P interval of 21 mm.). Two VPCs are noted. The pause following each VPC is terminated by a beat produced by an artificial demand pacemaker which has been set to discharge when diastole reaches 26 mm. in duration (an escape-rate of approximately 58/min.). A fusion beat is seen to follow each "pure" demand pacemaker beat.

3—*Fusion beats during intermittent AV dissociation.* Fusion beats may occur during the transition back and forth from supraventricular control of

both the atria and ventricles and control of the ventricles by a subsidiary automatic center located in the ventricles. (Fig. 4).

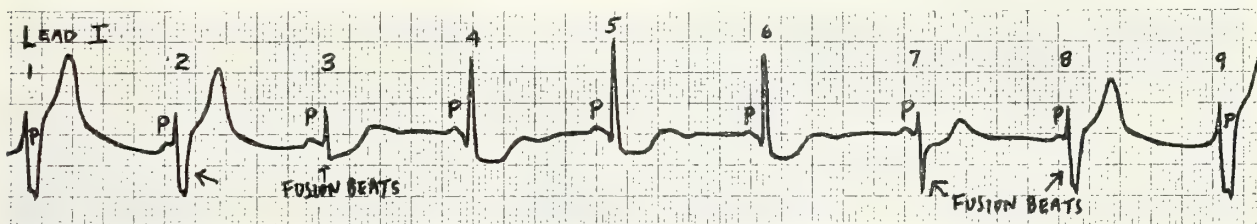


Figure 4

The basic rhythm is sinus with rate ranging from 58 to 65/min. When the sinus rate slows below 60/min. (P-P intervals greater than 25 mm.) an idio-ventricular automatic pacemaker assumes control of the ventricles at a rate of 60/min. During the transition back and forth to sinus control of the ventricles fusion beats are noted with varying degree of fusion (beats 2, 3, 7, and 8).

4—*Fusion beats during complete AV block.* Rarely in the presence of complete AV block the control of the ventricles may vacillate between two dif-

ferent pacemaker sites, one in each ventricle. Fusion beats may occur if both pacemaker sites discharge simultaneously. (Fig. 5).

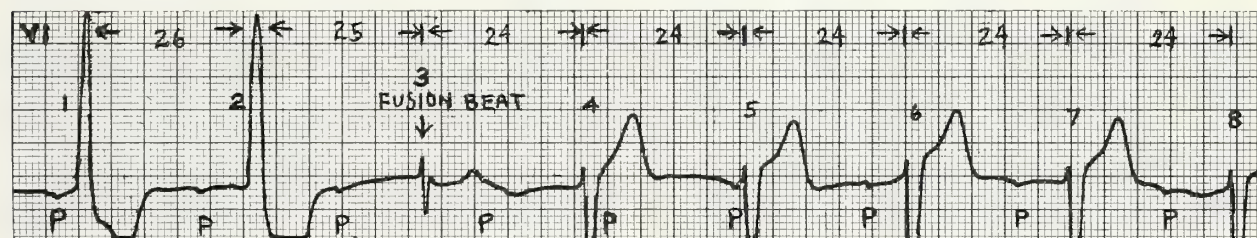


Figure 5

Complete AV block is present. Atrial deflections occur at fairly regular intervals (20-22 mm.) but bear no constant relationship to the QRS complexes. The first two ventricular complexes exhibit wide R-waves and depressed ST-T segments at 26 mm. intervals (rate of 58/min.). The configuration of these beats is consistent with pacemaker location in the left ventricle. The 4th to 8th ventricular complexes exhibit rS patterns with tall T-waves at intervals of 24 mm. (rate of 62/min.). The configuration of these beats is consistent with pacemaker location in the right ventricle. The 3rd ventricular represents a fusion beat and I-V conduction appears normal because of simultaneous activation of the right and left ventricles by the right and left ventricular pacemakers.

Radiologic Case of the Month

Dissecting Aneurysm of the Aorta

Mount Sinai Hospital, Hartford, Connecticut

Harold Moskowitz, M.D., Director, Department of Radiology

History

The patient is a 62 year old white male who entered the hospital with one day history of searing anterior chest pain radiating to the neck.

Physical examination revealed an acutely ill male. Blood pressure was 180/80. Pulse was 96 and regular. Physical examination revealed marked diminution of the left radial and axillary pulses.

Comment

Because of the character of searing anterior chest pain and decreased pulse, a thoracic arteriogram was performed. Via the right femoral artery and using the Seldinger technique, a catheter was threaded up into the ascending aorta. 45 cc. of contrast were injected and films obtained. One notes characteristically two (Fig. 1) channels within the

ascending aorta. There is dissection of the right carotid as well as the left subclavian. The left common carotid filled normally. There was some aortic insufficiency present and the dissection could be followed into the abdominal aorta where there was

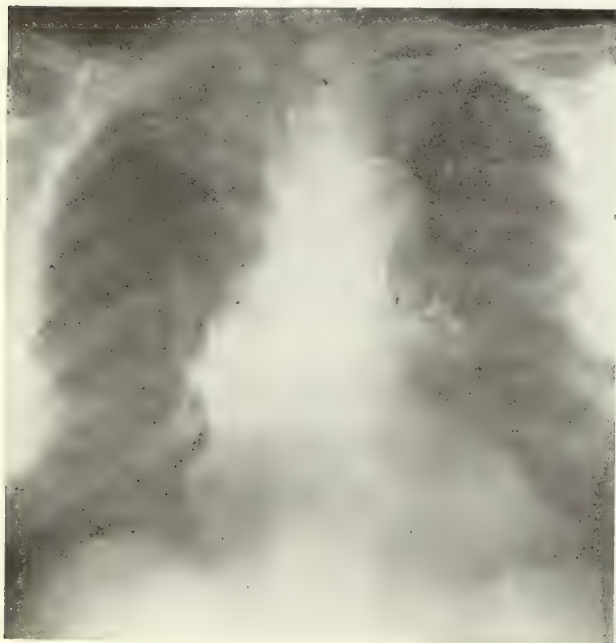


Figure 1

Catheter in the ascending aorta. There is filling of two lumina with only early opacification of the false lumen. The thin radiolucent line (arrow) represents dissected intima and media. The right carotid and left subclavian arteries have also been dissected. There is aortic insufficiency.



Figure 2

Re-entry of the dissection is made just about at the level of the diaphragm. Major visceral vessels are normal.

re-entry immediately above the vessels to the major abdominal viscera. (Fig. 2)

The following day the patient expired. At post-mortem a large tear in the ascending aorta, approximately one inch above the aortic valve was found with re-entry point in the abdominal aorta. The patient had ruptured back into the pericardium and died due to cardiac tamponade. The dissection involved the left subclavian and right innominate arteries.

Discussion

There have been numerous articles in the literature¹⁻³ during the past ten years dealing with dissecting (hematoma) aneurysm of the aorta. The term was first used by Laennec in 1819 and we have gained increased knowledge of this entity during the past decade through the use of selective aortography.

The definitive method of study in these cases is selective aortography via either a percutaneous transfemoral or transaxillary approach. Positioning of the catheter is made under fluoroscopic control and a small test injection of 5-10 millilitres of contrast is made to check the precise location of the catheter.

Although dissecting aneurysm has been reported in all ages, the peak incidence of cases is between the ages of 40 to 70. Predisposing factors are hypertension and cystic medial necrosis of the aorta. Marfan's syndrome, coarctation of the aorta, Turner's syndrome and pregnancy have all been implicated as possible predisposing factors.

The origin of dissecting aneurysm is thought to be due to rupture of the vasa vasorum giving rise to an intramural hematoma which then results in an intimal tear. Most dissections begin either in the ascending aorta or just distal to the left subclavian artery. As in our case, most patient's describe severe chest and back pain which radiates up into the neck and arm, although in occasional cases pain may be absent or masked. On the conventional chest X-ray, widening (Fig. 3) of the aortic shadow on sequential films is an important clue as is the finding of calcification of more than 1 cm. from the outer aortic wall. Definitive diagnosis, though, is dependent on contrast visualization of the aorta and the demonstration of two lumina as in figure 2. The thin line of radiolucency (arrow) represents the intima and inner portion of the media seen in

profile. One may see complete or incomplete opacification of the false channel depending on its patency. Arteriography provides an evaluation of the aortic cusps, presence of aortic insufficiency and the distal site of re-entry which are all important factors in deciding definitive therapy.^{4,5}

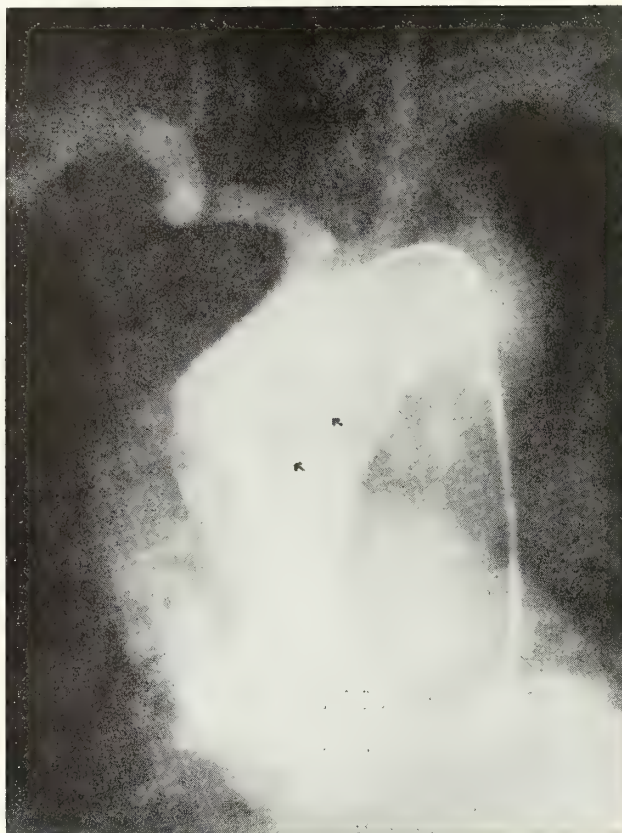


Figure 3

A conventional chest X-ray reveals some widening of the thoracic aorta, but no other specific abnormalities.

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In Memoriam

Cody, George Richard, Georgetown University, 1936. Dr. Cody was a general practitioner in the Norwalk area since 1939. He was a member of the medical staff of the Norwalk Hospital. Dr. Cody was also a member of the Norwalk Medical Society and the Fairfield County Medical Association. He died January 1, 1971, at the age of 59.

Comstock, Edward Richard, Tufts Medical School, 1933. Dr. Comstock was an obstetrician in the New London area since 1935. During World War II he was commissioned a first lieutenant (medical) with the Air Corps and served as a squadron surgeon in England. Dr. Comstock interned at Bridgeport Hospital and was on the staff of Lawrence Memorial Hospital. He was a member of the Connecticut State Medical Society and the American Medical Association. Dr. Comstock died January 29, 1971, at the age of 62.

Monacella, John Manilla, Columbia University, 1935. He served in the Army Medical Corp during World War II, and was a practicing physician in Windsor 25 years. Dr. Monacella was a member of the Hartford County Medical Association and the Connecticut State Medical Society. He died January 19, 1971, at the age of 62.

Paul, Voyle Abrams, Hahneman Medical College, 1913. He was an Army veteran of World War I, serving as a first lieutenant in the medical corps. Dr. Paul was a member of the American Medical Association, the Connecticut State Medical Society, the Fairfield County Medical Association, the American Association of General Practitioners, the American College of Surgeons, and the American Institute of Homeopathic Society. He died January 7, 1971, at the age of 81.

Post, Edward Andrew, Georgetown Medical School, 1933. Dr. Post was a urologist in the Waterbury area since 1934. He was a member of the American Urological Society, American Association of General Practitioners, the Connecticut State Medical Society, and the American Medical Association. Dr. Post died January 12, 1971, at the age of 63.

White, Ralph L., Eclectic, Missouri, Medical College, 1912. Dr. White was a general practitioner in the New Canaan area since 1914, and was a member of the Connecticut State Medical Society, and the American Medical Association. He died January 9, 1971, at the age of 82.

LABORATORY NOTES

Cancer of the Bladder

Cytology is moderately useful in the case of patients with bladder tumors. Papillomas and low-grade carcinomas rarely shed recognizable tumor cells. Poorly differentiated carcinomas may be identified in the first urine sample tested in 86% (Esposti, *Acta Cytol.* 14, 145, Mar. 1970.) In the followup of treated patients cytology may become positive as long as 2 years before clinical confirmation is available.

CPK Available

We now perform routine kinetic analyses for CPK (creatinine phospho-kinase). This enzyme is elevated in injuries to cardiac or striated muscle, allegedly earlier than GOT in some cases. False elevations do occur, unfortunately, in disease of non-muscular organs. Upper limit of normal is 50 units (men) and 30 units (women).

Pertussis Symptoms

Connor (*NEJ Med.* 283, 390, Aug. 20, 1970) points out that identical symptoms, signs and blood count can be produced by adenovirus or the pertussis bacteria. This doubtless explains why the bacteriologist so frequently fails to find pertussis organisms in "typical" whooping cough, particularly in an immunized population.

Drugs in Urine

We assay urine separately for three chemical groups of drugs commonly the subject of drug abuse. These are

1. Morphine group, includes codeine, methadone, heroin (breaks down to morphine) and quinine (used to "cut" opiates).
2. Barbiturates.
3. Amphetamines.

For each class of drugs we need a 50 ml. sample of urine. All analyses are done by thin layer chromatography. Tests are done 2 or 3 times a week unless there is an emergency.

M. Goldberg, Ph.D.

Uric Acid

Measurements of serum uric acid (urates) is one of our relatively precise tests (1 SD = 0.2 mgm. CV = 4%). Nevertheless abnormal values are frequent. Reasons for this include:

1. Limited ability to excrete urates is common. Persons with this defect have high serum levels when they eat a high purine diet.
2. Lability of values in same person, related to stress, perhaps mediated through diet.

3. Age; children low, rapid rise during puberty peaking in males age 20-24.

4. Drugs: Increased by low dosage salicylates, thiazides, etc; decreased by high dosage salicylates, benemid, coumarins, corticosteroids, allopurinol, etc.

5. Neoplastic diseases, particularly during chemotherapy, produce high levels.

6. Fasting raises urates markedly. So does alcoholism, renal disease, toxemia of pregnancy.

7. Gout—due in 70% of patients to increased synthesis of urate. In attacks of gout urate crystals are found in joint fluid leukocytes, probably results in increased lactic acid production and precipitation of uric acid at low pH. Finding uric acid crystals in tophi or synovial fluid is diagnostic of gout.

R. N. Barnett, M.D.

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Gambino, S. R. CC-54

Healey, L. A. JAMA 212, 1960, 1970.

Letter To The Editor

Members of the Society are invited to communicate with the Editor expressing their opinions or giving information as to any matter of interest to the members. The Editorial Board reserves to itself the right to select the communications or excerpts therefrom that will be published and to reject others. As with other material which is submitted for publication, all letters will be subject to the usual editing. Address all correspondence to: THE EDITOR, CONNECTICUT MEDICINE, 160 St. Ronan Street, New Haven, Connecticut 06511.

To The Editor

Community Hospitals Discover Each Other

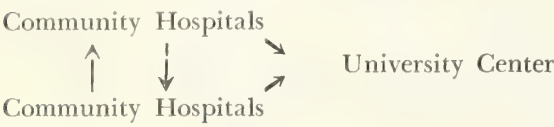
The Town-Gown Syndrome can be applied to the isolation and lack of communication existing many years between the University Center and the Community Hospital.

There are many reasons for the long perpetuation of this separateness. The University Center did not feel a sense of commitment or obligation to the Community Hospital, but rather looked condescendingly at medical care outside its ivory tower. The Community Hospital struggled alone to make progress and looked upon potential university involvement only with suspicion.

Without plan and little awareness, however, the University Center actually has become responsible for staffing the community hospitals with highly trained, well-motivated physicians. Many university-trained physicians cannot be absorbed by the Medical Center or its urban area, and as a result, have been moving out to the periphery. Leadership within the Community Hospital and in the community itself have become aware of the value of these trained physicians and have been actively planning to attract them to their hospitals. These physicians, in conjunction with the advent of health professionals, such as sophisticated hospital administrators and well-trained paramedical personnel, are resulting in the development of well-organized medical centers. Recently, the Regional Medical Planning Programs were devised to bring knowledge from the University Hospital to an assumedly backward medical community. The Connecticut Regional Medical Planning Program (CRMP) in the process of relating to the community hospitals and implementing its programs, often found a knowledgeable, highly motivated, medical community. These communities, in many instances already had existing, excellent medical programs and were anxious to become involved in further self-development. Although not offering basic research facilities, the community hospitals have a vast source of clinical material for teaching and research potential. The community hospital actually is a most-important cog in the total health care system. With this new stature, it is finding a new relationship with the University which is mutually stimulating and beneficial. The CRMP, I believe, has been truly catalytic in encouraging a University Center—Community Hospital relationship.

However, a most interesting development has begun to take place. The Community Hospitals have now discovered each other. They are now looking to each other for help in areas of medicine less developed within their own hospital. It is apparent that one hospital may have developed expertise in one field, for example, cardiology; while another may have become more advanced in another field, for example, gastroenterology. As a result, one may anticipate that at an accelerating rate, the development of community hospitals affiliations with community hospitals, possibly in conjunction with the University Center. Among the many reasons for this unexpected but natural development can be cited the physical impossibility of the University Center to involve itself comprehensively with all community hospitals; frustration with the

continuing condescending attitude of some faculty members at the University Center; the inability of some faculty members at the University Center to recognize mutual benefits of affiliation; the continued feeling of suspicion that some community hospitals hold for the University Center; the development of full-time physicians in community hospitals with more time and motivation for communication and desire for initiating new programs; the natural ability of community hospital personnel to understand and relate to each other in contradistinction to the University; and the trend of the government to support clinical, rather than basic science research, making available resources for Community Hospital programs. Hopefully, many of these problems can be solved and the following cycle of integration would evolve:



The Community Hospitals are becoming exciting places and as a result, the University Center, if it remains at its current level of medical expertise may soon be equaled, in the development of medical and health care, by the community hospital. Therefore, what has been traditionally the role of the University Center, aside from basic research and esoteric medical care, it is now available at the community hospital level. University Centers should seriously re-evaluate and re-adjust their role in the medical and health care system in order to maintain leadership in the medical community.

Vincent A. DeLuca, Jr., M.D.
Chief of Medicine
Director of Medical Education
The Griffin Hospital

BOOK REVIEW

STATISTICS IN BIOLOGY, VOLUME II. *Chester I. Bliss, Ph.D. Statistician, Connecticut Agricultural Experiment Station. McGraw-Hill Book Company, New York, 1970, 639 pp. 101 figures. \$22.00*

Reviewed by: KENNETH J. MITCHELL

This is the second book in the long-awaited three-volume series of applied statistics for scientists and students of the life sciences, especially those who need a practical guide that begins where their limited mathematical training left off. The first volume was published in 1967 and the third will be available in 1972 or 1973. The three will cover a remarkable

range of material of current interest to the biologist and medical researcher.

Volume I deals with the binomial, Chi-Square and normal distributions, analysis of variance, simple experimental designs and linear regressions. Volume II continues with polynomial, exponential, asymptotic, periodic and multivariate regressions and concludes with chapters on factorial experiments and covariance. Volume III will be concerned with bioassays, associated measurements, complex designs, statistics of counts, and sampling surveys. Volumes I and II are carefully written, detailed, full of realistic examples and will be satisfyingly complete with the publication of Volume III. They are excellent student and reference texts. The material is based on a two-semester graduate-level course at Yale University. Considering the "strenuous" nature of the course and the material added since the course was last given in 1967, I recommend that the contents be covered in not less than three semesters, unless the students have had courses beyond elementary statistics.

The real strength of these works lies in the wealth of examples included by Dr. Bliss whose initial training in experimental zoology and field entomology led him into studies of statistics in England as a student of Sir R. A. Fisher. He has continued as a consultant at the Connecticut Agricultural Experiment Station and teacher at Yale University. In each example, particular statistics are used like instruments to help achieve the biological solution to a problem. The basic data, graphic representation, and the analysis and interpretation of results are included with the examples. All computations can be done on a desk calculator. Exercise examples are provided for class work.

The contents of the second volume and its relevance to medicine can best be described by mentioning a few of the 40 examples the author has drawn from this field. In the opening chapter, the rate at which acetylsalicylic acid is absorbed into the blood, both when taken in water and in an effervescent base, illustrates the comparison of polynomial regressions. Among the exponential relationships discussed in the next chapter is the reaction time of mice to vitamin A. The clotting rate of normal plasma is related to its percentage concentration by a hyperbola as is the relationship between pulmonary ventilation and alveolar gas pressure in humans. The growth rate of rats decreases asymptotically as its adult weight is approached. The blood pressure response of dogs to increasing doses of 1-norepinephrine is sigmoid in form and can be described by a logistic curve. Periodic regressions accurately quantify the relationship between the time of year and the incidence of poliomyelitis or of deaths from pneumonia. The growth of a boy's heart is adequately predicted by his increase in weight. His height proved to be unnecessary as judged by multivariate regression analysis. By means of covariance in the last chapter, the threshold dose of digitoxin in male and female cardiac patients ranging in age from 3 to 70 years was related uniformly to the square root of their body weights. Each of these chapters includes a description of analysis of variance techniques for isolating the nature and source of variation.

The three volumes provide the opportunity to learn how conclusions and measures of precision can be drawn from biological data. They represent the culmination of an exceptionally rich and productive career of one of the major contributors to the field. I recommend all volumes highly for use in teaching and research.

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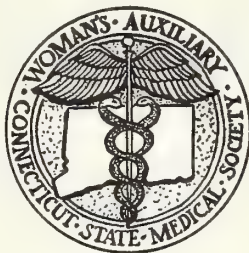
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Hospitality—Be a force in your community toward good family relations with visitors from far lands. Exchange experiences and ideas with foreign residents. Give a foreign student a home away from home. Sponsor an International Day. Is there a need for translation teams to aid foreign-speaking patients in your area? Whatever the need, be helpful in providing the answers and make more friends for our country and for medicine.

Just What is Mental Health?

The social upheaval in our society today, the changes in morals and values, and the drug and sexually oriented problems of our young people, have all created mental health hazards that we have not had before. Dr. Dana L. Farnsworth, director of health services at Harvard University, says that in order to combat these mental hazards, we must first define mental health and differentiate it from "social good" or "moral good" or "practical good".

"Mental health," he says, "is more than just the absence of overt mental illness. It is not freedom from anxiety, tension, dissatisfaction or all man's other negative states; nor is it conformity, lack of stress or constant happiness. It does not incline individuals to undermine authority, encourage their opposition to religious values or foster a determination to satisfy one's own cravings at the expense of others."

"What, then, is mental health?" he asks. "Perhaps it can best be defined as the state which permits an individual the freedom to interact positively with his environment and be capable of loving and working and playing. It is the ability to carry on self-determined activities with satisfaction to one's self and with a sense of responsibility to others."

Think International Activities In 1971

Our country is spending large sums of win friends around the world. IHA is a great means for achieving this aim, for it helps to bring the joy of good health to millions of suffering people.

"How long has it been since you've had a snappy auxiliary meeting program reminding your membership about the values of international health activities," asks Mrs. Howard Liljestrand, national chairman.

She suggests: Inject a little renewed enthusiasm among your experienced members, while impressing your new members. Review a book about foreign medicine or a biography of a missionary physician. Show a film, read a letter from the wife of a doctor serving abroad, visit an agency or dream up something unique to generate renewed devotion to the IHA cause.

Avenues for IHA activity are:

Agency Assistance—It's a good idea to select an agency or two to be your special recipients. Establish a rapport by visiting the agency or entertaining one of their staff, who might make a vibrant talk to your audience. This program involves communicating, establishing needs, collecting or making wanted articles, packing, transporting—and then starting all over again.

Doctor's-Wife-to-Doctor's-Wife—This is the auxiliary friendship within the family program. Physicians, whether American or foreign, engaged in international health services, appreciate a personal contact with American medical families. Establish such a program person-to-person, or even county auxiliary-to-medical outpost. Send medical journals and other reading matter.

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MEETING NOTICES

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GENERAL

March 29-April 2—Monday-Friday

52nd Annual Session

American College of Physicians

Denver, Colorado

April 21—Wednesday

9:00-3:00

Air Pollution—Respiratory Disease

Conference for Physicians

Valle's Steak House

West Haven

April 26-29—Monday-Thursday

Eight Annual Reserve Forces Medical Symposium

Houston, Texas

For Medical Air National Guard and Air Force Reservists.

April 27-29—Tuesday-Thursday

179th Annual Meeting of the Connecticut State Medical Society

Hilton Hotel, Hartford, Connecticut

Theme for Sessions: Infectious Diseases

2:00 P.M.

"The surgery of coronary artery disease"

3:45 P.M.

"Diagnosis and management of atrial arrhythmias"

9:45 A.M.—Friday

"Rehabilitation of patients with myocardial infarction"

11:30 A.M.

"Basic principles in the selection of patients with rheumatic heart disease for surgery"

2:00 P.M.

"Bradyarrhythmias in acute myocardial infarction"

3:45 P.M.

"Evaluation of bypass graft in the treatment of coronary artery disease"

10:00 A.M.—Saturday

"Pacemaker therapy of cardiac bradyarrhythmias and tachyarrhythmias"

ALLIED MEDICINE

March 24—Wednesday

9:00 A.M.

Conference on Dependent Nursing Functions

Park Plaza Hotel, New Haven

Sponsored by the Connecticut State Medical Society, Connecticut Nurses Association, Connecticut League for Nursing and the Connecticut Hospital Association.

Guest Speaker: Charles L. Leedham, M.D., Director, Bureau of Educational Activities, Commonwealth of Pennsylvania

CARDIOLOGY

May 13-15—Thursday-Saturday

7th Annual Cardiovascular Symposium

St. Francis Hospital, Hartford

9:45 A.M.—Thursday

"Pathologic aspects of fatal acute myocardial infarction"

11:30 A.M.

"Newer concepts in the Wolff-Parkinson-White Syndrome"

INTERNAL MEDICINE AND SURGERY

September 15-June 1—Tuesday

Lecture Series: "Medical Emergencies"

Lawrence and Memorial Hospitals

New London, Connecticut

Contact: Edward Gipstein, M.D., Director of Medical Education. (442-0711 ext. 361).

OPHTHALMOLOGY

May 6-7—Thursday-Friday

44th Annual New York Eye and Ear Infirmary

Clinical Conference: Cataracts, Pediatric Ophthalmology, Glaucoma.

Biltmore Hotel, New York City

May 8—Saturday

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April 19-21—Monday-Wednesday

Clinical Pharmacology—Newer Drugs

University of Michigan, Ann Arbor, Michigan

Contact: A.C.P., 4200 Pine Street, Philadelphia, Pennsylvania.

ANNUAL COUNTY ASSOCIATION MEETINGS

MARCH 18, 1971—THURSDAY

Windham County Medical Association

Location: Not determined

MARCH 25, 1971—THURSDAY

New Haven County Medical Association

Waverly Inn, Cheshire

3:00 P.M.—Meeting 7:00 P.M.—Dinner

Chairman: Anthony Mancini, M.D.

MARCH 31, 1971—WEDNESDAY

Hartford County Medical Association

Hartford Hilton

5:00 P.M.—Meeting 7:30 P.M.—Dinner

Chairman: Julian Mandell, M.D.

APRIL 1, 1971—THURSDAY

New London County Medical Association

Lighthouse Inn, New London

6:00 P.M.—Reception 7:00 P.M.—Dinner

8:30 P.M.—Meeting

APRIL 6, 1971—TUESDAY

Fairfield County Medical Association

Frederick's Kings Highway Ext., Fairfield

3:30 P.M.—Meeting 7:30 P.M.—Dinner

APRIL 13, 1971—TUESDAY

Litchfield County Medical Association

White Hart Inn, Salisbury

5:30 P.M.—Meeting 7:00 P.M.—Dinner

Chairman: Eileen M. Pratt, Sharon

AROUND THE STATE

New Haven County

Board of Governors

New Haven County Medical Association

January 28, 1971

The Board of Governors of the New Haven County Medical Association met on Thursday, January 28, 1971 at the Oakdale Tavern, Wallingford, under the chairmanship of President Stewart J. Petrie, M.D. Forty physicians were present, including five Provisionary members who were indoctrinated into active membership.

The Executive Committee announced that it would meet with a broadly-based ad-hoc committee of the membership to seek ways to "make meetings more meaningful". It will also meet with the Yale and Community Physician Coordinating Committee to seek out goals for that committee.

The New Haven County Medical Association has embarked on a serious effort to "involve" itself in the field of *Health Planning*. A recent letter to the neighborhood corporations read "The New Haven County Medical Association is very much in favor of co-operating with any community health planning effort provided that what is sought is really true *co-operation* and not just an 'agreement in advance' to an already preconceived plan or approach". Dozens of county physicians are currently members of various community planning agencies and commissions.

A blue ribbon committee under the chairmanship of Saul Milles, M.D., known as the New Haven County Medical Association Health Planning Coordinating Committee began an in depth study of the problems and solutions in planning at its first two hours work-study session held at the County office on February 2, 1971.

Bernard A. Burnham, M.D. reported that the new COMPAC board is non-partisan and fairly composed. He stated that a membership drive is forthcoming and urged doctor support.

Our Councilor, Kurt Pelz, M.D. reported that the Conn. State Medical Society Council is re-evaluating CRMP and is concerned about maintaining confidential patient records.

Considerable time was spent evaluating how the Review Committee is trying to insure that the Board of Governors policy that "physicians fees in New Haven County will be reasonable" is maintained and observed.

Program Chairman Anthony D. Mancini, M.D. reported on the plans for the Annual Meeting to be held on March 25, 1971 at 2:30 p.m. at the Waverly Inn, Cheshire.

Public Relations Chairman Louis Cappucci, M.D. reported that due to a large public response, lots more doctors are needed for the Speakers Bureau.

Insurance Committee Chairman Harvey Fritz, M.D. received the Board of Governors endorsement of the new Lessere-Wertheim insurance package that calls for (1) a Professional Overhead Expense policy; (2) an increase in weekly disability benefits to a \$300. maximum, and (3) expansion of the basic County program to include employees.

Waterbury Local Association President Morris Coshak, M.D. reported progress on the Waterbury plan to renovate an older building for a "day care center" for youthful addicts.

Further involvement of the Woman's Auxiliary with Association business is being planned, and a rather broad integration is being sought in many different fields.

Respectfully submitted,
William L. West, M.D. *Clerk*

New Head Of Community Health Care Center Plan

Dr. Paul H. Lavietes, a specialist in internal medicine, has been named medical director of the Community Health Care Center Plan. Dr. Lavietes is associate clinical professor of medicine and of public health (medical care) in the Yale School of Medicine. The appointment was made at a meeting of the CHCP's executive committee held recently. Dr. Gordon K. MacLeod who had been acting medical director has resigned from CHCP. He had served in that capacity during the planning stages of the program.

Dr. Lavietes, who graduated from Yale College and the Yale School of Medicine, has been in private practice in New Haven since 1947. Before that, he held an appointment as assistant professor of medicine at the Yale Medical School and served as a captain in the Army Medical Corps Tropical Disease Research Center. He is a consulting physician to Fairfield Hills Hospital, the Veterans Administration Hospital in West Haven, Meriden Hospital and Laurel Heights Hospital in Shelton. He is also a member of the Society of Clinical Investigation and was one of the founders and is

presently an editor of the Medical Letter of Drugs and Therapeutics, the only source of comprehensive, objective current information on pharmacologic agents available to physicians in this country. Dr. Lavietes has been a contributor to numerous medical journals since 1931, concentrating on articles in the field of diabetes and other metabolic disorders.

In accepting the appointment as medical director, Dr. Lavietes said: "I have long felt that the type of comprehensive program contemplated by CHCP can give the patient more complete care more economically than our present fragmented payment system. It need not detract from the patient-doctor relationship. In fact, the relationship may potentially be improved since financial considerations need not come between the patient and the physician. This gives the physician as well as the patient the availability of needed laboratory, consultative and other back-up services without consideration of cost. To the physician such a group plan also affords some regularity of work load and time for a more normal family life. The success of such a plan assumes, of course, that it will be staffed with first rate physicians who are primarily interested in patient care. It will be a real challenge to find such physicians and to help them develop this new project."

The CHCP facility, which is located on Sargent Drive in the Long Wharf Area, is currently under construction. It has been designed to provide participants and their families with complete health care "through one door." An enrolled individual will be able to select his family doctor from among the CHCP physicians . . . specialists in internal medicine for adults and pediatricians for children. There will also be obstetricians, as well as specialists in other areas (dermatologists, orthopedists, and surgeons, etc.). Hospitalization is also included in the plan, which provides for a full range of services to the participant and his family, including prevention, diagnosis and treatment.

Cells From Mononucleosis Patient Cause Tumors

(*JAMA*: 212, 2032, June 22, 1970) Malignant tumors have been produced in hamsters injected with cultured cells from the bone marrow of an infectious mononucleosis patient. The tumors are metastatic, progressive and fatal. They secrete immunoglobulins of human antigenic type.—L.H.N.

Connecticut Medicine

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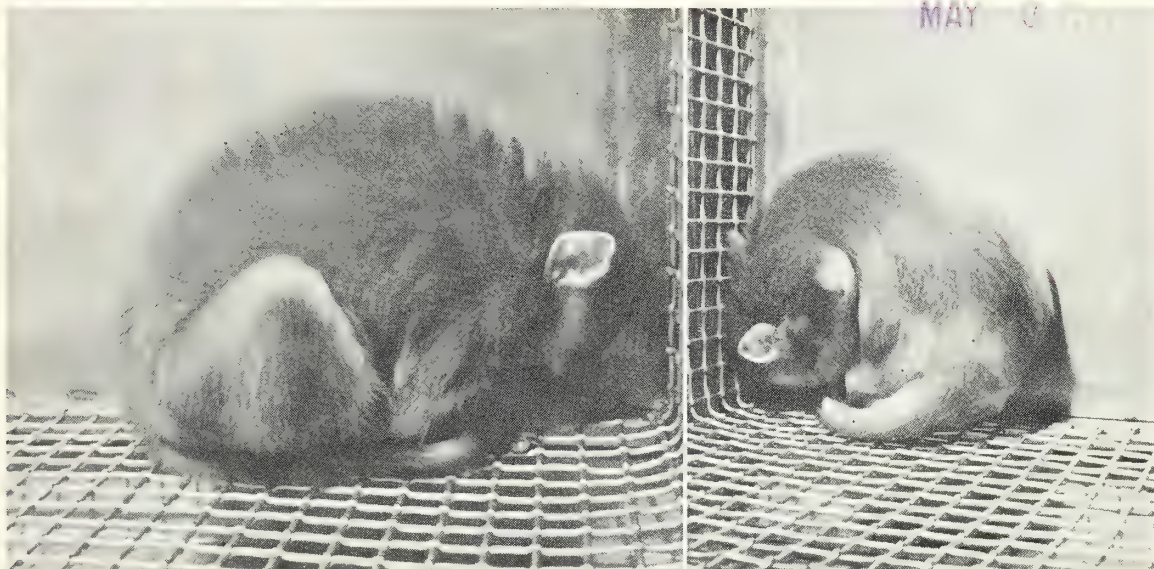
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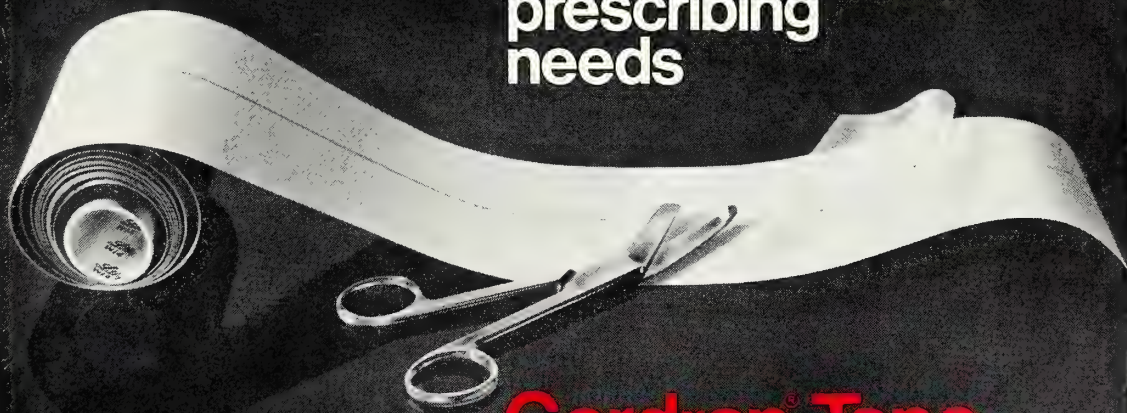


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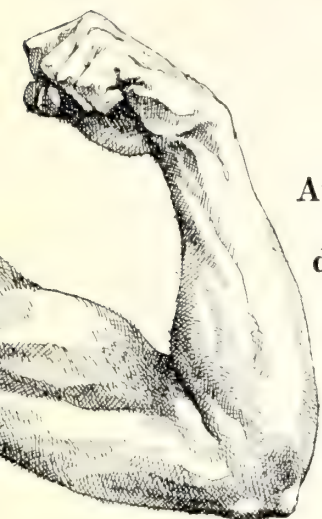
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**PLAN TO ATTEND 179th ANNUAL MEETING
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IF MORE MEN CRIED

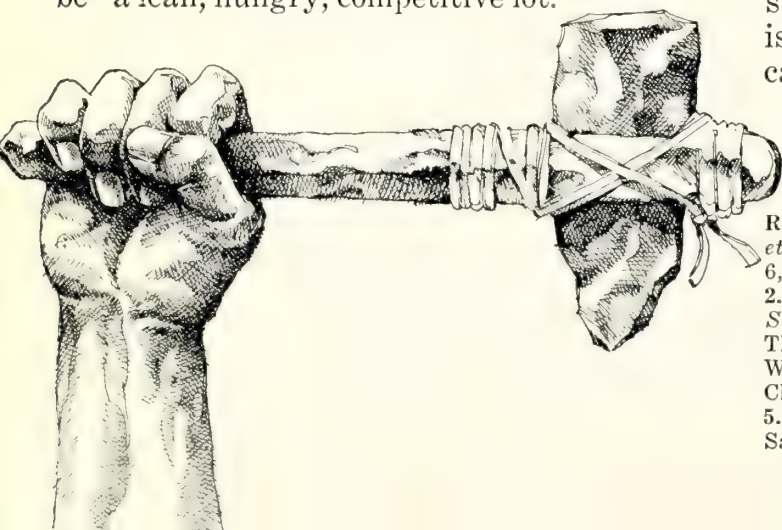


At least seventy-five out of one hundred adults with duodenal ulcers are men.¹

Why? It may be significant that duodenal ulcer patients tend to crave recognition and are "especially vulnerable to threats to their manly assertive independence."²

Hypersecretion—an atavistic response. Stewart Wolf, who, with Harold G. Wolff, studied the personalities of duodenal ulcer patients, wonders if masculine competitiveness is related to "an atavistic urge to devour an adversary." It is striking, he reports, that an accentuation of gastric acid secretion and motility can be "induced in ulcer patients by discussions that arouse feelings of inadequacy, frustration and resentment."²

By chance? A lean, hungry lot. Was the link between emotions and gastric hyperacidity acquired through mutation to serve a purpose? During man's jungle period of evolution, the investigator points out, a male dealt with a foe by killing and devouring it. "It may be more than coincidence," he concludes, that peptic ulcer patients appear to be "a lean, hungry, competitive lot."³



Big boys don't cry. If more men cried, maybe fewer would wind up with duodenal ulcers. But men will be men—the sum total of their genes and what they are taught. Schottstaedt observes that when a mother admonishes her son who has hurt himself that big boys don't cry, she is teaching him stoicism.⁴ Crying is the negation of everything society thinks of as manly. A boy starts defending his manhood at an early age.



Take away stress, you can take away symptoms.

There is no question that stress plays a role in the etiology of duodenal ulcer. Alvarez⁵ observes that many a man with an ulcer loses his symptoms the day he shuts up the office and starts out on a vacation. The problem is, the type of man likely to have an ulcer is the type least likely to take long vacations or take it easy at work.

The rest cure vs. the two-way action of Librax.[®] For most patients, the rest cure is as unrealistic as it is desirable. Still, the stress factor must be dealt with. And here is where the dual action of adjunctive Librax can help. Librax is the only drug that com-

References: 1. Silen, W.: "Peptic Ulcer," in Wintrobe, M. M., et al. (eds.): *Harrison's Principles of Internal Medicine*, ed. 6, New York, McGraw-Hill Book Company, 1970, p. 1444. 2. Wolf, S., and Goodell, H. (eds.): *Harold G. Wolff's Stress and Disease*, ed. 2, Springfield, Ill., Charles C Thomas, 1968, pp. 68-69. 3. *Ibid.*, p. 257. 4. Schottstaedt, W. W.: *Psychophysiologic Approach in Medical Practice*, Chicago, Ill., The Year Book Publishers, Inc., 1960, p. 163. 5. Alvarez, W. C.: *The Neuroses*, Philadelphia, Pa., W. B. Saunders Company, 1951, p. 384.

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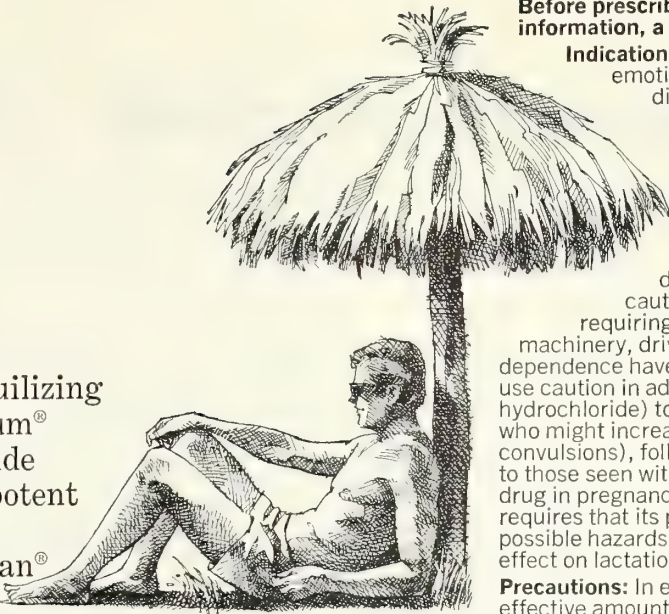
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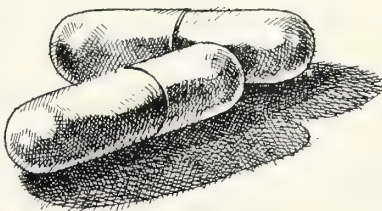
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Subscription rate for non-members \$15.00; Student-Members, interns and residents \$7.50; single copy \$1.50.

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THE PRESIDENT'S PAGE

In my previous President's Page I mentioned a recently published book "The American Health Empire" which had been reviewed in *The New York Times*. I have since read the book, which is sub-titled "Power, Profits, and Politics", and found it quite illuminating. According to the authors, The American Health Empire is the American Hospital Association (AHA), The Association of American Medical Colleges (AAMC), and Blue Cross. While the American Medical Association (AMA) is the target of the usual clichés in the Preface and Introduction, it is noticeably absent in the body of the book which is devoted to the results of the authors' study of the New York Health Scene.

While one might not agree with all the statements the authors make, there is much there that practicing physicians have been aware of, and may have said privately, that now is being brought to public attention. It should be "must reading" for all members of hospital Boards of Directors, Medical Boards and Staffs, Medical School Deans and Governing Councils, Board Members of voluntary agencies in the health field, Board Members of RMP's and Comprehensive Health Planning Agencies (especially the so-called "public" or "consumer" representatives) and, of course, our legislators. The latter should read the book to learn how the money they appropriate can be spent or misspent, while the others would do well to read and ponder whether their organizations are fulfilling their responsibility to the people and if not, are they personally guilty of the "sin of silence". To some philosophers and theologians the gravest sin is to be silent when one sees a wrong being done.

The authors name names and use quotations frequently. One of their targets is Dr. Martin Cherkasky of Montefiore Hospital, who is a vocal advocate of Pre-Paid Group Practice but whose hospital discontinued it's Pre-Paid Group (HIP) last year because it was uneconomic. Dr. Cherkasky, it would appear, is a past-master of the Art of Grantsmanship and is skillful in obtaining funds for various pilot studies and demonstration projects each of which lead to other studies and other projects. The authors describe the faculty of Dr. Cherkasky's Department of Preventive Medicine and Community Health at Einstein College of Medicine as a "Who's Hustling" in New York City health politics.

The Einstein-Montefiore and the Columbia-Presbyterian Medical Complexes are subected to close scrutiny and both come off badly. I was appalled by the callousness of some of the statements attributed (in quotes) to some of their leaders and their apparent misuse of funds and disregard for the welfare of the people. This is especially disheartening when the public image (projected by high-priced public relations agents?) has been that of the "do-gooder". I find myself less critical of the activists who "took over" Lincoln Hospital, an Einstein affiliate, last year. I now realize that perhaps they had justification.

There is much too much "meat" in the book to cover all the exposés. Blue Cross is described as having been created by the hospitals to guarantee payment of their charges and keep them solvent. It is accused of making no effort to

keep hospital costs down since it is controlled by the hospitals. The Health and Hospital Planning Council of New York is accused of keeping hospital bed space down so people cannot be admitted to hospitals and in this way reduce Blue Cross payments. The Regional Medical Program and Comprehensive Health Planning come in for their share of criticism. The activities of well-known and highly respected people in the Academic world and in Hospital Administration are described in detail and to their detriment. I found it shocking. The Medical-Industrial Complex is described at length. Their members serve on Boards of Hospitals, Planning Agencies, etc. as representatives of the consumer. (!!)

The authors offer no real solution to the "Health Crisis". They reject the proposed solutions (various types of National Health Insurance) as inadequate in that they are only concerned with financing. They also point out that the first National Health Insurance Program was inaugurated by Otto von Bismarck in Germany some 90 years ago to help quiet social unrest (did you forget?).

Some way will have to be found to provide the care the people need and want. If there is anything practicing physicians know, it is Medical Care. As I have said before, let us join with the people and together plan how to provide that care. Let us exclude the planners, the economists, the administrators and the academicians. We can include them later, if we need them.

More practicing physicians will be needed. Together with the people we must convince our medical educators to restructure the curriculum and re-orientate the students towards providing medical care. We need more primary physicians and it is up to our medical educators to provide them. Physicians must be trained to fulfill the needs of the people. Our medical educators must also take a close look at their faculties. Are all the full time physicians necessary for the teaching program or can some be released to provide medical care? Should we continue to create full-time positions, such as "Third Faculty" when there is a shortage of physicians? These are questions that require serious consideration.

The planners and medical economists are committed to the elimination of private practice and its replacement by organizations. They prefer the Pre-Paid Group or Health Maintenance Organization because they will then be able to control cost. In our discussions with the people we must acquaint them with the advantages and disadvantages of such organizations as well as the advantages and disadvantages of various modes of private practice. When they fully understand these systems they will be able to make an intelligent choice. It has been repeatedly said that all types of practice should be available to the people but the planners would have it otherwise. If we want the people to have a choice, we will have to direct our efforts to that end.

Morris A. Granoff, M.D.

P.S. Since this is my last President's Page, I want to thank you for the opportunity of sharing my thoughts with you.

M.A.G.

Stroke In A Woman With Sickle Cell Trait Taking Oral Contraceptives

Jonathan G. Greenwald, M.D.

It is rare for sickle cell trait or other sickle cell hemoglobinopathies to produce stroke. However, in the presence of factors promoting hypoxemia, stroke has occurred via the occlusion of small vessels by aggregates of sickled erythrocytes.^{1,2} Also, since April 1968, careful statistical analysis has confirmed the clinical impression that thromboembolic and cerebro-vascular disorders occur in greater than expected incidence among women using oral contraceptives.³⁻⁵ Haynes and Dunn were the first to draw attention to the clinical implications of the sickle cell-oral contraceptive combination when they documented the concurrence of pulmonary infarctions and oral contraceptive usage in one patient with sickle-thalassemia⁶ and two patients with Hemoglobin S-C disease.⁷ However, the following is believed to be the first reported instance of stroke occurring as a result of possible synergism between Hemoglobin S and an anovulatory agent, and is all the more noteworthy because the patient demonstrated uncomplicated sickle cell trait.

Case Report

T.M. (N.H. #R9164) a 20 year old right handed gravida 1, para 1, Negro woman, was admitted on March 10, 1969. She had eaten and felt well that morning, when suddenly she fell unconscious and was taken to the emergency room, where she regained consciousness after approximately five minutes. In July 1967, the patient had been given a tablet containing 1.0 mgm. ethynodiol diacetate and 0.10 mgm. mestranol (Ovulen). In August 1968, the patient had a "fainting spell" while at home alone. She was taking her oral contraceptive as directed, and continued to do so until her admission.

Physical examination on admission revealed a well developed, well nourished Negro woman. She was now fully oriented and spoke clearly. Vital signs were normal. She staggered to the right with a broad based gait, and showed vertical nystagmus. Diminished strength and sensation, downward arm drift, and a "silent sole" were noted on her right side. Laboratory values included a hemoglobin of 12.3 gms. percent, a hematocrit of 38 percent, a white cell count of

8,960 with a normal differential, and a platelet count of 176,000. The erythrocyte sedimentation rate (Westergren) was 12 mm. per hour, and the urine was normal with a specific gravity of 1.011. Clotting time, prothrombin time, urea nitrogen, glucose, creatinine, calcium, phosphate, three L.E. cell tests, rheumatoid factor, skin and muscle biopsy, PPD first and second strength, chest and skull films, spinal fluid, electrocardiogram, electro-encephalogram, electro-myogram, and brain scan were all negative. Forty percent of the red cells sickled on preparation with two percent sodium metabisulfite. Hemoglobin electrophoresis revealed an A-S pattern with less than two percent Hemoglobin F. A neurological consultant agreed that the patient had sustained right hemiparesis secondary to brain stem damage as a result of vascular occlusion.

The patient's hospital course was uneventful. By the tenth hospital day, she no longer had nystagmus, but still swayed to the right and showed signs of a waning right hemiparesis. She was discharged at this point, with a strict warning to abstain from oral contraceptives. Follow up examination one month later showed no gross abnormalities, but there was a minuscule right sided motor deficit. Two years after admission the patient remains well.

Discussion

There is widespread patient acceptance of oral contraceptives, and they are thus far the most effective means of birth control.⁸ However, since the introduction of oral contraceptives, statistical analyses have shown a four to six fold increase in morbidity^{4,5} and an increased trend in mortality^{9,10} attributed to cerebral thrombosis and embolism in both white and Negro women of childbearing age. It is therefore crucial to identify those pre-existing conditions which make a woman unsuitable for oral contraception. The latest revised labelling for oral contraceptives, as set forth by the United States Food and Drug Administration¹¹ lists thrombophlebitis, pulmonary embolism, and cerebral thrombosis under "adverse reactions". It also includes increases in prothrombin, as well as increases in Factors VII through X, under "altered laboratory results". However, nowhere is there any mention of specific pre-existing blood dyscrasias or hemoglobinopathies constituting possible added risk to the use of these agents. Yet, 8.5 percent of American Negroes have sickle cell trait,¹² and the patient population of the average family planning clinic

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contains a large number of Negro women. Hence, the relevance of this case presentation.

The patient under discussion had a previously undiagnosed sickle cell trait, and her work-up excluded any other primary cause for stroke. Baird et al. have emphasized that factors encouraging hypoxemia (e.g. infection, anesthesia) can precipitate central nervous system sickling.² Although Charace and Conley show that viscosity of deoxygenated blood is directly related to the proportion of sickled red cells, they also point out that the viscosity of blood containing sickled erythrocytes is "approximately proportional to the square of the hematocrit."¹³ These facts support the now widely accepted concept that the clinical manifestations of sickling states are attributable to intravascular sickling rather than the degree of anemia. The oral contraceptive, via its effect on hemostatic balance¹⁴⁻¹⁶ may well have lowered local oxygen tension sufficiently to have induced central nervous system sickling, thereby increasing blood viscosity and precipitating a stroke in this young woman. Further weight is lent to this hypothesis because her lesion was clinically in the vertebro-basilar artery system, previously considered a rare site for stroke in younger persons but apparently not among groups of patients who had been on anovulatory agents.¹⁷

Prospective studies, using large groups of women positive for Hemoglobin S would be necessary in order to confirm whether their predisposition to cerebro-vascular (and thromboembolic) disease is increased by anovulatory agents, and indeed whether their use is more hazardous to these women than pregnancy per se. Meanwhile, whenever a physician contemplates prescribing an oral contraceptive for a patient of Negro ancestry, he should first order a sickle cell preparation and, ideally, a hemoglobin electrophoresis. If sickling and/or Hemoglobin S is found, alternative contraceptive methods must be given strong consideration.

Summary

A 20 year old Negro woman developed sudden loss of consciousness with right hemiparesis while taking an oral contraceptive. She demonstrated a hitherto undiagnosed sickle cell trait. The stroke in this predisposed individual, may well have been precipitated by the anovulatory agent. It is sug-

gested that physicians should consider alternative methods of contraception whenever Hemoglobin S is present.

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The Practicing Physician, The Tuberculin Reactor and Isoniazid

Reginald C. Edson, M.D.

Any person in Connecticut who is a positive reactor to an intracutaneous tuberculin test, and has a negative chest X-ray and no other evidence of tuberculosis may be a candidate for prophylactic isoniazid to prevent the emergence of clinical tuberculosis.

Serious consideration should be given to inactive cases who have not had adequate treatment with drugs; positive reactors with leukemia, silicosis, Hodgkin's disease, or uncontrolled diabetes, and those receiving prolonged corticosteroids or undergoing gastrectomy; contacts; recent converters and positive reactors among those age 21 or under.

Results of the Use of Isoniazid Prophylaxis

Controlled trials of the effectiveness of isoniazid prophylaxis have been engaged in with the U.S. Public Health Service since 1955, involving more than 70,000 persons. Combined results of these studies showed that isoniazid reduced the frequency of tuberculosis by 74% during the year medication was given and by 55% after the year of medication.¹

Projected Results of the Use of Isoniazid Prophylaxis

It has been estimated:

1. That there are 25,000,000 truly infected persons who harbor living tubercle bacilli in the United States;
2. That each year, one of every 625 previously infected persons will develop active tuberculosis;
3. That on the average each new active case will infect three persons among the 165,000,000 uninfected; and
4. That one of every 12 new infections will progress to clinical disease during the first year of infection.²

Table 1 illustrates for the United States and for Connecticut the projected annual cycle of develop-

ment of tuberculous infection and disease—as well as the effect of isoniazid prophylaxis of the entire infected population on an annual cycle based on 50% reduction of tuberculous infection and disease.

The Tuberculin Test Picks Up the Infected

By injecting 0.1 cc. of intermediate strength tuberculin into the skin and determining the presence or absence of induration 48 to 72 hours later, the infected person will be found to have induration measuring 10 mm. or more in diameter.

Present-Day Prophylaxis

These present-day possibilities to prevent tuberculosis before it develops provide the practicing physician a new incentive to tuberculin test his patients. Follow-up procedures for any patient found to have 10 mm. or more of induration to 0.1 cc. intermediate strength intracutaneous P.P.D. tuberculin test, should include a chest X-ray.

He may wish to place his positive reactors age 21 or under who have a negative chest X-ray and no other evidence of tuberculosis, on prophylactic isoniazid. (A year's supply for one patient can be purchased for \$2.50.) Precautions, contraindications and side effects must be considered and medication should be stopped if there is any question of an adverse reaction.

He may wish to refer inactive cases, positive reactors with leukemia, silicosis, Hodgkin's disease or uncontrolled diabetes and those receiving prolonged corticosteroids or undergoing gastrectomy; contacts and recent converters to a specialist or to the local or state chest clinic for evaluation and prophylactic isoniazid. He should certainly refer any problem patients that he has placed on chemoprophylaxis if he plans to continue them on isoniazid.

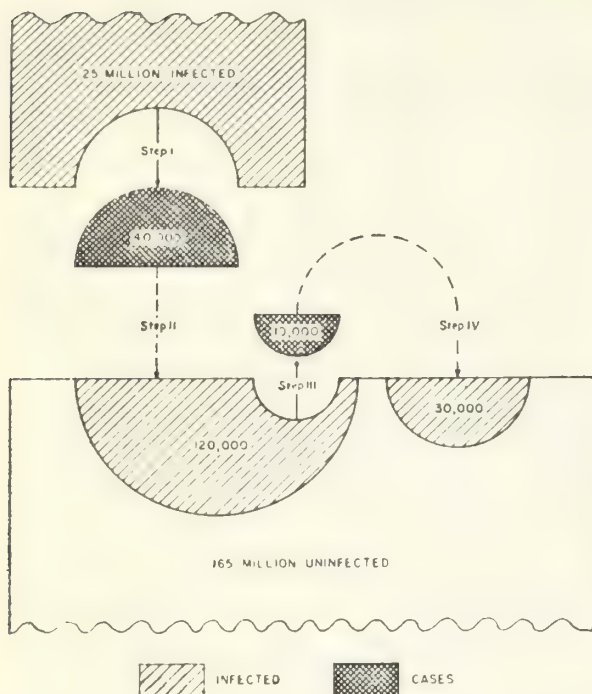
Tuberculin Testing³

The Mantoux Intradermal Test

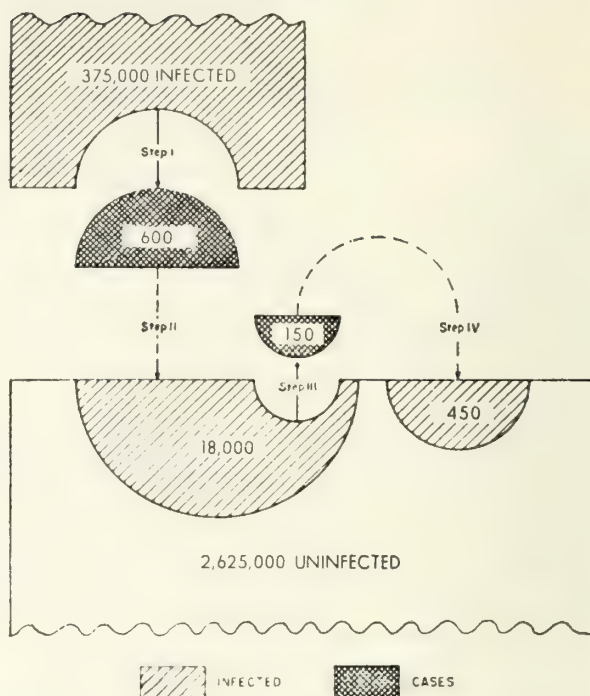
The Mantoux intradermal test using P.P.D. (a purified protein derivative of tubercle bacilli) is preferred for testing because it provides a testing material of standard strength. It allows accurate control of dose, and results with the same dose are

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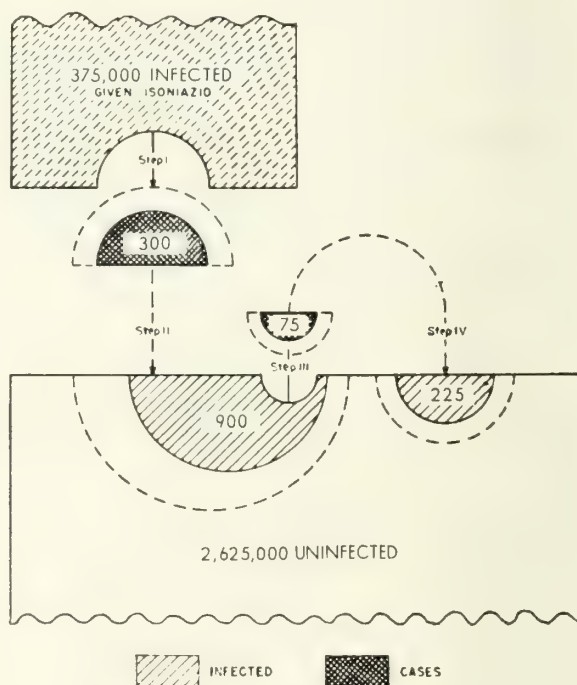
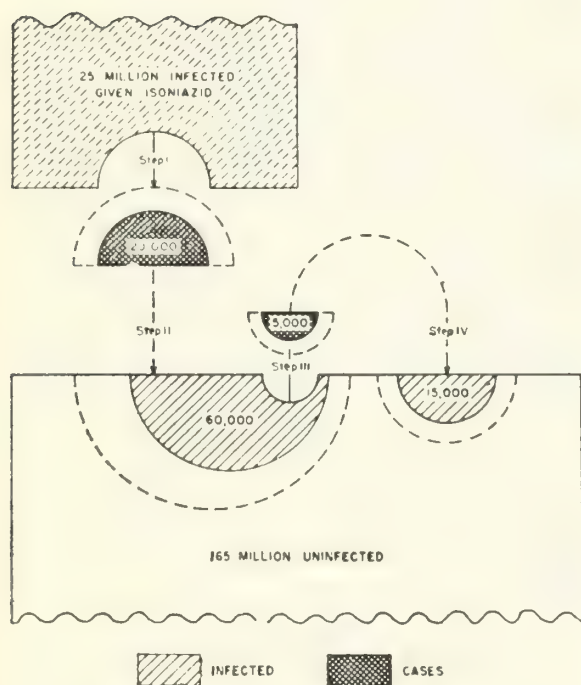
UNITED STATES²



CONNECTICUT



Schematic illustration of annual cycle of development of tuberculous infection and disease.



Schematic illustration of effect of isoniazid prophylaxis of entire infected population on annual cycle of development of tuberculous infection and disease.

Table I

comparable, consistent and reliable. It is the standard of comparison for all other tuberculin tests. If other tests are used, positive reactors should be rechecked with the intradermal test.

Recommended Dose of P.P.D.

For screening purposes, a dose of 0.0001 mg. P.P.D. is recommended. This dose is referred to as 5 T. U. or 5 international tuberculin units.

Technique of Administration

The flexor surface of the forearm is preferred although other skin areas may be used. After cleansing the skin and using sterile technique, 0.1 ml. of the proper strength of P.P.D. is injected into the skin. The injection is made with a short (one-fourth to one-half inch), sharply bevelled platinum (26 gauge) or steel (27 gauge) needle with a tuberculin syringe. The injection should be made just beneath the surface of the skin with the needle bevel upward. A discrete, pale elevation of the skin, 6 to 10 mm. in diameter resembling a mosquito bite, is produced when the fluid is injected intradermally. If the wheal is smaller than 6 mm., the injection should be repeated at another site.

When to Read the Test

Mantoux reactions are at their peak 48 to 72 hours after injection. Measurements may be taken when convenient during this time. The longest diameter of induration should be recorded in millimeters.

Significance of Size of the Reaction

Only induration is significant. Erythema alone does not indicate infection. Induration must be felt and measured.

Positive Reactions (10 mm. or more of induration) reflects sensitivity resulting from infection with mycobacteria tuberculosis.

Doubtful Reactions (5 through 9 mm. of induration) can result from cross-sensitization by atypical mycobacteria. The test should be repeated at a different site. However, in individuals who are close contacts of active tuberculosis cases, reactions in the 5 through 9 mm. range are considered as positive.

Negative Reactions measure 0 through 4 mm. and may reflect low-grade cross-sensitivity to atypical organisms.

Erythema With Little or No Induration—If the area of erythema is larger than 10 mm., retesting at a different site is indicated. The injection may have been made too deeply.

How Often Should Negative Tests Be Repeated?

Children who are tuberculin negative may be

done annually or more often if there is known risk of infection.

Adults should be tested at least once and, if negative, may be tested annually—once in three years—or more often if there is known risk of infection.

What Does A Positive Reaction Indicate?

A positive reaction indicates infection, but does not prove the presence of disease. Follow-up procedures should include a chest X-ray. Whenever a case of tuberculosis is found, tuberculin tests of all family contacts should be done. Associates of child reactors should be examined in an effort to discover the source case.

Does A Positive Tuberculin Ever Revert?

Yes. Sensitivity develops in 2 to 10 weeks after infection. Once acquired, sensitivity to tuberculin almost always persists. It may decrease or disappear temporarily during severe illness, measles and measles vaccination, high fever, overwhelming miliary or pulmonary tuberculosis and during the administration of adrenal corticosteroid hormones.

Chemoprophylaxis³

Chemoprophylaxis—the prevention of disease in the infected individual by drugs—holds great promise for the control of tuberculosis. It involves the use of a single, inexpensive, oral drug—isoniazid.

Chemoprophylaxis should be considered for any positive reactor. Serious consideration should be given to inactive cases who have not had adequate treatment with drugs; positive reactors with leukemia, silicosis, Hodgkin's disease, or uncontrolled diabetes, and those receiving corticosteroids or undergoing gastrectomy; contacts, recent converters; and positive reactors among those age 21 or under.

Isoniazid, as a prophylaxis, should be administered daily for one year. It has very few side effects, but should be given under careful medical supervision. The dose should not exceed 300 mg. per day.

Daily Dose

The recommended daily adult dose is 100 mg. three times daily with meals. The recommended daily dose on the basis of body weight is 4 to 5 mg. per kg.

The recommended daily dose for children is 100 mg. daily up to 44 lb. body weight, 200 mg. daily from 45 to 88 lb. and 300 mg. daily above 88 lb. The recommended daily dose on the basis of body weight for children is 6 to 10 mg. per kg.

Precautions and Contraindications

When isoniazid is used for chemoprophylaxis, epilepsy or convulsions are contraindications to its use. It should not be used where renal damage is known or suspected to exist.

Undesirable side effects are generally rare, but include hyperreflexia, paresthesias, vertigo, drowsiness, excitement, euphoria, delay in micturition, muscular twitching, dryness of the mouth and peripheral neuritis. Allergic reactions—rash, hyperpyrexia or both—are rare as is jaundice. Chemoprophylaxis should be promptly abandoned in the presence of *any* undesirable side effects.

Summary

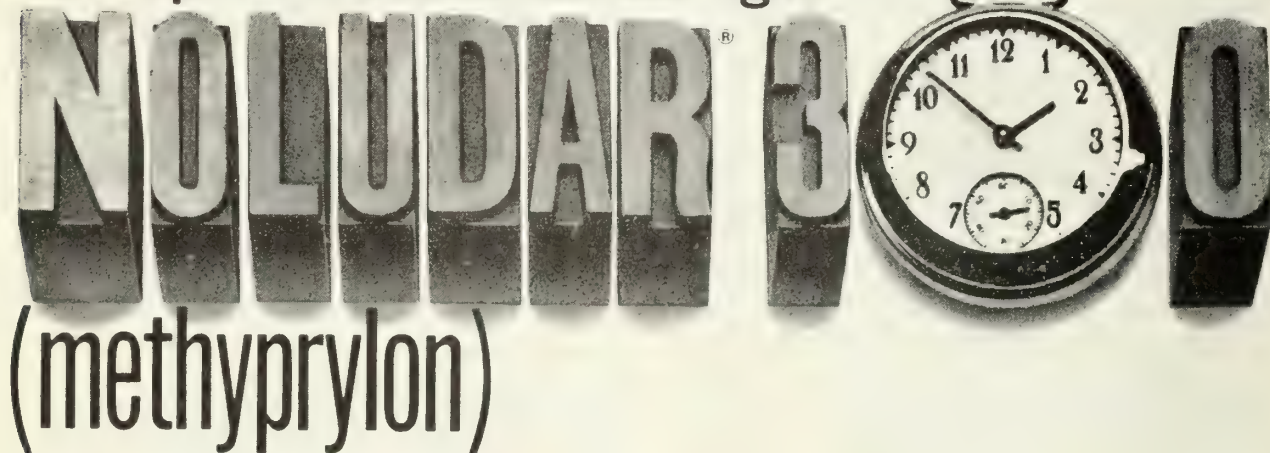
It is recommended that the practicing physician tuberculin test his patients and consider isoniazid prophylaxis for the positive reactor with a negative chest X-ray and no evidence of clinical tuberculosis.

Those at higher risk should be seriously considered. Tuberculin testing and isoniazid prophylaxis including dose, contraindications and undesirable side effects are described. The management of uncomplicated isoniazid prophylaxis by the practicing physician is recommended. The referral to a specialist or to the local or state chest clinic is advised for complicated or problem situations.

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one capsule for the rest of the night



Before prescribing, please consult complete product information, a summary of which follows:

INDICATION: Relief of insomnia of varied etiology.

CONTRAINDICATIONS: Patients with known hypersensitivity to the drug.

WARNINGS: Caution patients about combined effects with alcohol and other CNS depressants. Caution against hazardous occupations requiring complete mental alertness, such as operating machinery or driving a motor vehicle shortly after ingesting the drug.

Physical and Psychological Dependence: Physical and psychological dependence rarely reported. If withdrawal symptoms do occur they may resemble those associated with

withdrawal of barbiturates and should be treated in the same fashion. Use caution in administering to individuals known to be addiction-prone or those whose history suggests they may increase the dosage on their own initiative. Repeat prescriptions should be under adequate medical supervision.

Usage in Pregnancy: Weigh potential benefits in pregnancy, during lactation, or in women of childbearing age against possible hazards to mother and child.

PRECAUTIONS: If sleeplessness is pain-related, an analgesic should also be prescribed. Perform periodic blood counts if used repeatedly or over prolonged periods. Total daily intake should not exceed 400 mg, as greater amounts do not significantly in-

crease hypnotic benefits.

ADVERSE REACTIONS: At recommended dosages, there have been rare occurrences of morning drowsiness, dizziness, mild to moderate gastric upset (including diarrhea, esophagitis, nausea and vomiting), headache, paradoxical excitation and skin rash. There have been a very few isolated reports of neutropenia and thrombocytopenia; however, the evidence does not establish that these reactions are related to the drug.

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Disorders of Androgen Metabolism In Women

C. Wayne Bardin, M.D.

Testosterone was first quantified in human plasma¹ in 1961, and in the intervening nine years there have been many studies confirming the importance of this androgen. While this report will deal primarily with testosterone metabolism in women, it is pertinent to first review the differences in androgen physiology between men and women. In men, testosterone is synthesized in the Leydig cells of the testis, and the plasma level of the steroid is usually a good index of the quantity secreted into the blood. Testosterone secretion is under direct control of pituitary LH. The quantity of LH in plasma determines the plasma testosterone level, and this steroid in turn regulates LH secretion. The Pituitary-Leydig cell axis is, thus, an example of autoregulatory feed-back control (similar to the pituitary-adrenocortical axis), and the integrity of this axis can be easily evaluated by estimation of either the plasma LH or testosterone. In contrast to men, the production of testosterone in both normal and virilized women is complex. Testosterone is derived from multiple organs, and the plasma level is not under strict feed-back control. The study of testosterone metabolism in women is complicated by the fact that the plasma concentration of this steroid is not always a good index of its production.

In recent years the availability of testosterone determinations to the clinician has increased. It is therefore necessary to review the pathophysiology of androgen metabolism in women in order to understand the diagnostic usefulness and limitations of testosterone measurements. In the present report the sites of testosterone production in women are reviewed. Exemplary clinical material is presented to illustrate certain disorders of androgen metabolism, and a critique on the usefulness of certain diagnostic procedures is given.

Plasma Testosterone in Women

The sites of testosterone production in women are illustrated in Figure 1. Testosterone is secreted

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into the blood by both the adrenals and the ovaries. In addition, however, to the direct secretion of these endocrine glands, blood testosterone is also synthesized in non-endocrine tissue from several steroid precursors.² Relatively non-androgenic steroids or prehormones of adrenal and ovarian origin are converted to testosterone in both the liver and peripheral tissues. Androstenedione is by far the most important prehormone in normal women serving as precursor for 50-70% of blood testosterone.^{3,4} The normal values for plasma testosterone and the most important prehormone, androstenedione are given in Figure 2. A less important prehormone, dehydroepiandrosterone, may account for about 15 per cent of plasma testosterone in women.⁵ Although dehydroepiandrosterone is of only limited importance as a testosterone precursor in normal women, there are no studies of its contribution to blood testosterone in virilized patients. On theoretical grounds, however, it is unlikely that this prehormone is important in a significant number of hirsute women.

It is apparent from these considerations that testosterone production in virilized women may be extremely complex. A thorough study of these pa-

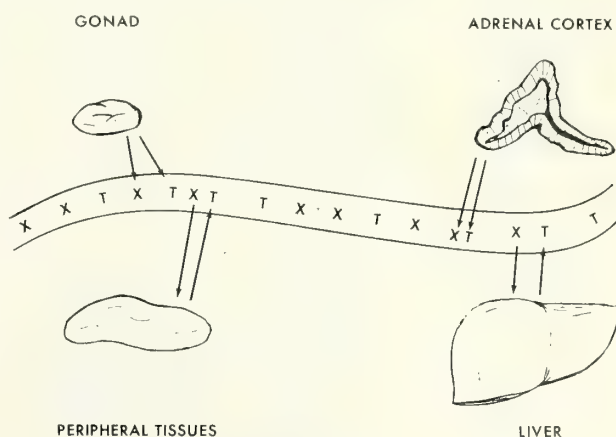


Figure 1

Testosterone (T) and pro-hormone (X) enter the blood from the gonad and adrenal cortex. Pro-hormones are converted to testosterone in peripheral tissues and in liver (from Lipsett *et al*²).

tients must assess not only the ovarian and adrenal, but also the prehormone contribution to plasma testosterone.

Virilizing States

The most common causes of virilization are listed in Table 1. In all of these conditions virilization is usually associated with increased testosterone production. Hirsutism is the most common clinical feature when testosterone production is increased, but clitoral enlargement, temporal balding, increased musculature, increased sebum and deepening of the voice may occur in the extreme cases. When these latter signs are present, there can be no doubt on clinical grounds alone that there is a disorder of androgen metabolism; but when the patient has only hirsutism, the clinician must first determine if there is an increase in blood testosterone before an extensive work-up is begun. This question is most readily answered at present by measurement of the testosterone production rate. The reason for reliance on the production rate determination is illustrated by the following study of women with idiopathic hirsutism and polycystic ovaries.

Most women who develop hirsutism without other signs of virilism or Cushing's syndrome can be divided into two large groups on the basis of

ovarian histology; those with polycystic ovaries and those with normal ovaries. This latter group has been designated "idiopathic hirsutism". Although these groups are pathologically distinct, their clinical features are similar and experience has demonstrated that they cannot be distinguished by measurement of androgens in peripheral blood.⁶ Therefore, for the purpose of discussion, patients with polycystic ovaries and idiopathic hirsutism are termed "hirsute women". In 28 normal women plasma testosterone levels ranged from 0.02-0.07 $\mu\text{g}/100\text{ ml}$ and in 37 hirsute women from 0.03-0.3 $\mu\text{g}/100\text{ ml}$. Although as a group the hirsute women had higher testosterone levels, thirty-five percent had plasma levels in the normal range. When the testosterone blood production rates were measured 35 of 37 hirsute women had values above the normal range even though 14 of 37 had normal plasma testosterone.⁶ These observations led to the following conclusions: (1) increased testosterone production can be demonstrated in most hirsute women with polycystic ovaries and idiopathic hirsutism and (2) the testosterone production rates more clearly distinguish the hirsute from normal women than do measurements of plasma testosterone.

The apparent paradox of normal plasma testosterone concentrations in some patients with increased production rates was explained by the fact that the rate of testosterone metabolism was approximately twice as fast in women with increased testosterone production. Therefore, as the testosterone production in women increased, the rate of metabolism increased so that the plasma level may not have become elevated until the production rate was 2-3 times normal. A related problem exists in women with hyperthyroidism and on estrogen therapy. In these patients testosterone levels may increase without a significant change in the production rate due to decreased androgen metabolism.^{7,8}

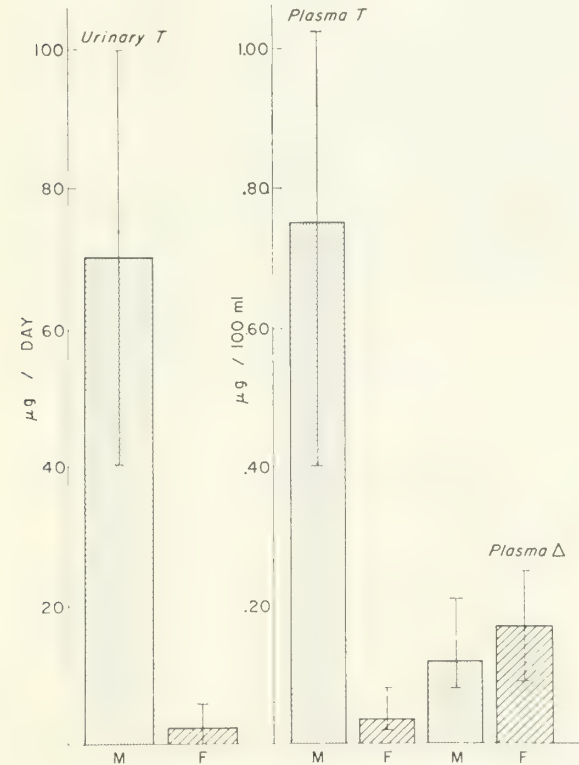


Figure 2

Urinary and plasma testosterone (T) and plasma androstenedione (Δ) levels (from Lipsett *et al*²).

TABLE 1

DISORDERS ASSOCIATED WITH INCREASED TESTOSTERONE PRODUCTION AND VIRILIZATION

- A. Disorders of adrenal and/or ovarian origin
 - 1. Idiopathic hirsutism
 - 2. Polycystic ovaries
- B. Disorders of adrenal origin
 - 1. Congenital adrenal hyperplasia
 - 2. Cushing's hyperplasia
 - 3. Adrenal tumors
- C. Disorders of ovarian origin
 - 1. Stromal hyperthecosis
 - 2. Leydig (hilar) cell hyperplasia
 - 3. Ovarian tumors

In all of these conditions it is clear that the plasma testosterone level may give a false impression of the actual quantity of steroid entering the blood. By contrast, the testosterone production rate measures the quantity of steroid entering the blood from all sources and gives an accurate estimate of blood testosterone regardless of the complexities of its metabolism.

As previously noted, approximately 50% of plasma testosterone in normal women is derived from the steroid precursor, androstenedione. In Figure 3 the androstenedione contribution to the testosterone production rate in several groups of virilized women is summarized. In patients with idiopathic hirsutism and polycystic ovaries only about 25% of plasma testosterone is from androstenedione, and the remainder is probably secreted by the adrenals or ovaries. In women with congenital hyperplasia, however, 50% or more of the blood testosterone is synthesized in peripheral tissues from the prehormone androstenedione (Fig. 3). Since only 3% of plasma androstenedione is converted to plasma testosterone in hirsute women, only in patients with relatively high androstenedione production rates will this steroid be a major contributor to plasma testosterone.⁴

That the sites of testosterone production may be very complex even when the obvious localized pathology is recognized is illustrated by three cases of ovarian virilism summarized in Table II. All three patients had increased testosterone produc-

tion and clinical signs of virilism. In the women with hyperthecosis⁹ virtually all the testosterone was secreted by the ovary; whereas, the ovarian tumor secreted primarily androstenedione which was the precursor of 95% of plasma testosterone. In the woman with Leydig cell hyperplasia¹¹ testosterone was from multiple sites. These studies emphasize the importance of localizing the organs which secrete testosterone or its precursors in the virilized women prior to treatment.

Localizing the Sites of Testosterone Production

Suppression tests: The validity of suppression tests for indirect localization of sites of excess androgen secretion rests upon the assumption that adrenal and ovarian androgen secretion are respectively diminished by selective suppression of ACTH and gonadotropins. Suppression tests have been in use for many years and a decrease in androgen levels during ACTH suppression with glucocorticoids has been interpreted as evidence for adrenal androgen secretion. Similarly, a lowering of blood testosterone during estrogen administrations was thought to be indicative of ovarian secretion. Recent studies, however, have demonstrated that the effects of glucocorticoids and estrogens are more complex than once suspected and have questioned the general usefulness of suppression tests for evaluation of androgen secretion.

Glucocorticoid suppression of cortisol and ACTH secretion in normal subjects is now well established. In addition to cortisol androgen levels may decline during glucocorticoid administration. Measurements of plasma testosterone and androstenedione levels during a standard dexamethasone suppression test in patients with idiopathic hirsutism

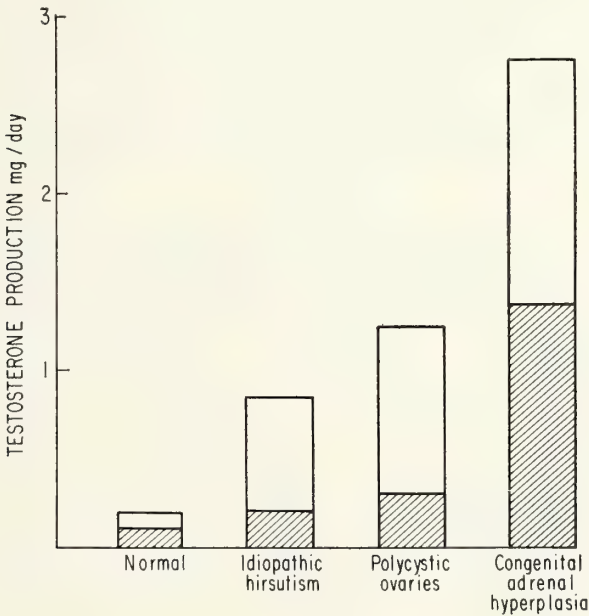


Figure 3

Production rate of testosterone and fraction derived from androstenedione (shaded area).

TABLE 2

SITES OF TESTOSTERONE PRODUCTION IN WOMEN WITH OVARIAN VIRILISM

Sites	Hyperthecosis	Ovarian Carcinoma	Leydig Cell Hyperplasia
Testosterone Production Rate mg/day	3.0	5.0	1.0
From Ovary*	95%	—	30%
From Plasma			
Androstenedione	—	95%	30%
From Adrenal or Plasma			
Precursors other than Androstenedione	—	—	40%

* Ovarian venous blood collected at surgery.

and polycystic ovaries (Fig. 4) provide an index of the glucocorticoid suppressible fraction of androgen production. On the basis of this type of study, increased adrenal androgen production has been suspected in women with both idiopathic hirsutism and polycystic ovaries.

Direct estimation of androgens in ovarian and adrenal venous blood have now allowed a more precise definition of androgen secretion and illustrate the limitations of suppression tests. In a recent study, Kirschner and Jacobs¹² examined thirteen virilized women with normal ovarian size by selective catheterization of ovarian and adrenal veins (Table 3). In eight of these women the ovaries were the major source of excess androgen production, and in five, androgen levels were high in both the ovary and adrenal venous effluents. Significantly, excess androgen production solely of adrenal origin

was not demonstrated in any of these women. Dexamethasone produced a significant suppression of plasma androgen levels in eight of the thirteen women (Table 3). Of particular interest was the fact that five of the eight patients with ovarian androgen hypersecretion suppressed during dexamethasone administration. These studies suggest that dexamethasone may have an effect on both ovarian and adrenal steroidogenesis and indicate that glucocorticoid suppression is not a useful diagnostic test for localization of the site of excess androgen production.

Estrogen suppression for the evaluation of hirsute patients is even more difficult to evaluate. Although estrogen treatment decreases androgen plasma levels in some women, in others plasma testosterone may actually increase due to marked reduction in the rate of testosterone metabolism which occurs during estrogen therapy. Furthermore, prolonged treatment of virilized women with estrogen suppressed plasma LH levels in only 30% of the patients treated.⁸ These observations suggest that an estrogen suppression test may be of limited value in evaluation of ovarian androgen secretion in women. The use of estrogen plus progesterone for gonadotropin suppression in hirsute women has not been systematically evaluated.

Ovarian and Adrenal Vein Catheterization: Selective catheterization of both ovarian and adrenal veins can now be accomplished in conscious patients. These studies provide not only blood samples for analysis, but also X-ray visualization by means of reflex veinography. Measurement of testosterone and other androgens in blood from ovarian and adrenal veins offers the most direct method for localizing the site of increased androgen production. Two illustrative studies are presented in

TABLE 3

SITES OF EXCESS ANDROGEN PRODUCTION IN 13 WOMEN WITH NORMAL OVARIAN SIZE

	Selective Catheterization	Dexamethasone Suppression
Ovary	8	5
Ovary + Adrenal	5	3
Adrenal	0	—

From Kirschner and Jacobs¹²

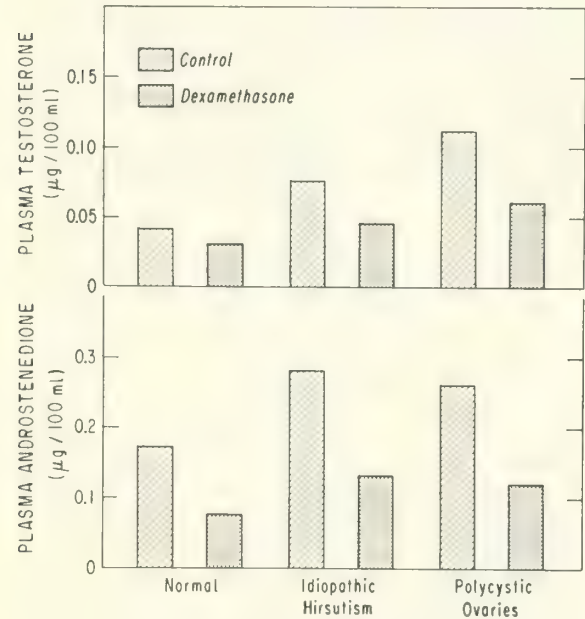


Figure 4

Effect of dexamethasone suppression (8 mg day for 4 days) on plasma levels of testosterone and androstenedione in normal women and in women with hirsutism (from Lipsett *et al*¹²).

TABLE 4
OVARIAN AND ADRENAL VENOUS TESTOSTERONE AND ANDROSTENEDIONE LEVELS IN VIRILIZED WOMEN. BLOOD SAMPLES COLLECTED IN CONSCIOUS PATIENTS BY SELECTIVE CATHETERIZATION

Patient	Plasma Testosterone µg/100 ml		Plasma Androstenedione µg/100 ml	
	Right	Left	Right	Left
Right Adrenal Tumor				
Ovarian Vein	0.10	0.07	0.08	0.80
Adrenal Vein	*1.1	0.07	*16.6	0.05
Peripheral Vein	0.15		0.25	
Hyperthecosis				
Ovarian Vein	*2.7	*4.9	*13.7	*21.6
Adrenal Vein	0.20	0.14	2.5	2.0
Peripheral Vein	0.24		0.40	

* Elevations over the peripheral plasma levels indicating sites of increased androgen secretion.

Table 4: The adrenal tumor was actually localized by venous contrast studies and the increased androgen levels in the right adrenal vein provided only corroborative data. The patient with hyperthecosis (Table 4), however, had ovaries of normal size and appearance by both X-ray examination and on direct visualization. In this case the androgen measurements were of primary importance for localizing the ovarian pathology prior to surgery.

In summary, the complex origin of androgens in normal and virilized women has been reviewed. The studies presented warrant the following conclusions: 1) Virilization in women correlates better with the testosterone production rate than with the testosterone plasma level. 2) "Suppression" of the adrenal and ovary with glucocorticoids and estrogens respectively cannot localize the sites of excess androgen production. 3) Selective retrograde catheterization of the adrenal and ovarian veins provides a direct assessment of abnormal androgen secretion.

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LOUIS H. NAHUM, M.D., *Editor*

CONNECTICUT MEDICINE

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Public Education and Partnership: Top Priority in Helping Prevent and Control Diabetes

Ira Vaughan Hiscock, M.P.H., Sc.D.

In these days of explosions: of bombs, of population, and of trash; and of overdue public concern for ecology—human and other inter-related factors of environment and satisfying living in America, we encounter impressive forces of competition for attention. Attitudes, behavior, changing conditions, professional and personal self-interest, are sometimes obstacles. Our capability is often blunted by tradition, by lack of creativity, and by inadequate understanding.

Perhaps we require better ways of using limited resources, with priorities* established clearly and suited to the economic and cultural and geographic conditions involved. We are reminded that "deep and wrenching changes" are necessary in our so-called systems and in our programs for education, health and welfare. Those in high places of responsibility, furthermore, should rapidly appraise the damages to human life and comfort being caused by sudden and uninformed reduction in resources for constructive research, evaluation and health education processes throughout the Nation.

In our twenty-first year of the organization of the Connecticut Diabetes Association, our focus of alarm and anxiety is justified for many reasons. Pressing is the responsibility for us to find ways to tackle our problems more vigorously and wisely. Surprisingly, to some who are in the forefront of action and opportunity, vast numbers of people are handicapped and dying of preventable and cur-

able diseases and accidents, or surviving with physical and intellectual impairment, for lack of most simple measures of modern medicine and rehabilitation. The grim irony is, says Dr. John Bryant, formerly of Vermont, that "... dazzling advances in biomedical science are scarcely felt in areas where need is greatest."¹

The National Commission on Community Health Services urged all communities to take the action necessary to provide comprehensive personal and community health services; including environmental, preventive, curative, and rehabilitative care of high quality to all people in the community.

The urgency of social action for health, public and private, is spreading in the feelings of increasing numbers of people throughout America. Those who precede and follow me on this timely program give the clinical and related reasons immediately related to *diabetes*. We must summon all of our resources and friendly inter-relationships to move forward in a constructive attack, together. No one acts alone in the 1970's on these vital issues and problems affecting human life.

Some may ask, "who will pay the piper; and will it be in time?" Coordinated planned *action* in partnership with others having similar roles and stakes is more vital than *words*. In related admonitions, Victor Cohn, science editor of *The Washington Post* observes that "fighting pollution is costly, urgent, and everyone is for it—but like other crusades, it is in danger of being talked to death".² Meanwhile also, Defenders of Wildlife urge that a wildlife crisis exists in America today and it needs more protection from man in order to survive. What about Defenders of Childhood and their concerns for unnecessarily high mortality rates of infants and the excessive fatal and handicapping injuries of children from accidents, and the delayed diagnosis of persons afflicted with diabetes, and the urgency of proper health care of all known cases? As important for wise consideration as are the other problems listed, our greatest human resource

IRA VAUGHAN HISCOCK, Emeritus Professor Public Health, Yale University, Chairman of the Board of Directors, Connecticut Diabetes Association, Inc.

Presented before the 21st Annual Meeting of the Connecticut Diabetes Association, Inc. at the Hartford Hilton Hotel in Hartford, Conn., Thursday afternoon, May 14, 1970 during the Annual Convention of the Connecticut State Medical Society.

* President Ferdinand Marcos, The Philippines, "Health and the Nation's future face us as the very foundation of active and useful lives, the *very highest priority*," The Third National Health Education Week, 5-11 October, 1969, Philippine Health Journal, October, 1969.

is our children. Can we make the former slogan of May Day—Child Health Day—apply to an all-year concept, and give more ample attention to diabetes?

In the exciting adventure of area-wide partnership, health planning, and action, we are involved in encouragement of many partnerships. "Engaged with us are physicians, medical societies, hospitals, insurance carriers, labor unions, organized and unorganized consumers, and a myriad of interrelated activities in fields which have an impact on health. . . . In health affairs today, we are tackling one of the most complicated experiments in intergovernmental, interprofessional, and public-private relationships ever undertaken in American history. Its real test comes in our communities. We must adjust our individual aspirations and fit them into the larger social setting."³

Or, in the words embodied under Purposes of the Connecticut Diabetes Association Program: "It now is very evident that early diagnosis, skilled care, research, community acceptance and cooperation for the patient, and hence eventual containment and even reduction of the total diabetes problem will be possible only if the *whole* community becomes informed, takes active interest, and lends a hand."⁴ Together with the American Diabetes Association, the CDA shares the great purpose of public education and case-finding, patient education, research, and professional education.

In the process of comprehensive health planning and cooperative service, we are hopeful of sharing our interest, responsibility and resources with hundreds of other organizations dedicated to the health, education, and welfare of all of the people and their families. We hold with them seven keys to the Temple of Health, namely: Reappraisal, research, reorganization with priorities, regionalization, recruitment, reimbursement, and rededication.

"No man is an island, entire of itself;
every man is a piece of the continent;
a part of the main . . .
Any man's death diminishes me because
I am involved in mankind."⁵

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Judges For The Connecticut Physicians' Art Association

April 27, 28, 29 1971

The judges for the Art Exhibit will be: Mitchell Pappas of Hartford, painter and Associate Professor of Fine Arts at Trinity College, Director of the Austin Art Center, member of the Connecticut Water Color Society and the Connecticut Academy of Fine Arts.

Charles Ferguson of New Britain, painter, Director of the New Britain Museum of American Art, and a member of the Council of the Connecticut Academy of Fine Arts.

Mrs. Jane Willoughby of Hamden, painter, teacher, member of the Silvermine Guild of Artists, Connecticut Water Color Society, Connecticut Academy of Fine Arts, New Haven Paint and Clay Club, Mystic and Essex Art Associations, member of the Board of Directors of the Creative Arts Workshop, and is represented in the Institute of Contemporary Art in Boston.



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*U.S. PATENT NO. 2,895,677

Connecticut Medicine

Editorials

Dealing With The Bereaved Child

There are many things to be said about the effect of death on the surviving members of the family. No one really knows what "normal" bereavement is but it seems clear that the general morbidity in the bereaved is significantly greater than in the controlled population. However, Ellard¹ points out that there are some groups at special risk and the physician has a special responsibility in ensuring that this morbidity is reduced as much as possible.

One special situation is that which arises when a child is disturbed by the death of a sibling. Cain, et al² studied 58 children aged two and one-half to fourteen who had lost a sibling. Approximately half showed marked guilt with considerable depression. The guilt appeared not only as sheer misery but also in many other neurotic ways which were not always easy to understand. In some cases there was a direct reason for guilt to be present; either the child had been angry with the sibling at the time of his death and had wanted him dead or more directly the child had done something which had contributed to his sibling's death.

Unfortunately it was found that parents typically did everything that they could do to deny the whole situation to the child and probably to themselves. As a result the surviving child had no chance to deal with his guilt and resulting depression. In slightly less than a quarter of the cases, guilt was imposed upon the child because the parents considered that he did not show a proper amount of grief. Sometimes the child had merely honestly said that he was glad the sibling had died but there were more complex reasons for an absence or apparent absence of reactions. The parents were disturbed by such a state of affairs particularly if they had their own problems in their relationship with the dead child.

Many of the surviving children developed distorted concepts of doctors, hospitals and religion. Many developed phobias of death and entertained other peculiar ideas. In about 40 per cent of the cases, the living child reproduced some of the dead child's prominent symptoms. Sometimes this occurred as an anniversary reaction,

sometimes as an immediate reaction to the death. Naturally this was a threat to their own identity which the parent had often further compounded by comparing the living child to the dead child and unfavorably.

Then there is the "anniversary" reaction described by Hilgard³ and others. If a person loses a parent in childhood he is the more likely to have a depressive illness later in life. He is at particular risk when a child perhaps the oldest child or the one most identified with has reached the age at which he was when the parent died. Ellard in his series has seen death of a parent in the patient's childhood as a remarkably common circumstance in the history of the person who is later broken down by his bereavement.

Clearly one of the important things to do is to ensure so far as is possible that the child of a dead parent mobilizes his feelings and expresses them. They will include perhaps not only grief at the loss but anger at being abandoned. The child who takes the death of a parent calmly and apparently with fortitude is a child at risk in later life and adults who assist him in the repression of his feelings are neither helpful nor as altruistic as they would like to think. The physician, therefore, has a responsibility which extends beyond that normally understood. To be sure he must do all he can to comfort his patient, but further, he needs to recognize that death is a situation involving the whole family and that harm may be done to some of the surviving members.

The moral is that while it is important to lay emphasis on diseases there are also important needs to be met in other members of the family. It is important that everything be done also with the risk of guilt and depression in a surviving member. Children especially may not show this risk at the time of bereavement and there may well be no sign of harm until it appears years or even decades later. More than this the sufferers or potential sufferers may not present themselves to the doctor since the emotional risk is neither expected by the doctor nor by society. Accordingly the doctor finds himself "dispensing platitudes and sedatives" at a time when other members of the family are badly in need of assistance from the doctor in facing the

guilt and depression resulting from loss of parent or sibling. If the doctor exercises complete frankness in discussion of death with children who are about to be bereaved or who are about to lose a loved sister or brother, he can very well spare them much morbidity at the time and even years or decades later.—L.H.N. (See front cover for separation depression)

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Life Stresses And Coronary Heart Disease

The truly scientific spirit then should make us modest and kindly. We really know little and we are all fallible when facing the immense difficulties presented by investigation of natural phenomena.—Claude Bernard, *Introduction to the study of experimental medicine*.

The hypothesis that life dissatisfaction is a risk factor for coronary heart disease (CH) deserves careful examination and prospective studies. The careful analysis of the knowledge gained so far has just been published¹. Several life conditions and events have been implicated as raising the risk of CHD. Death of close relatives have been found to increase risk of death in next of kin. "Hearts that yearn" may deserve particular preventive care. Rejection by a loved one, a set-back in work, or a loss of prestige frequently preceded the clinical emergence of CHD. Like bereavement, all these events fall under the psychiatric concept of "object loss". Russek found that prolonged emotional strain associated with job responsibilities preceded attack of CHD in 91 of his series of 100 young patients.²

Jenkins summarizes the work on the coronary-prone behavior pattern as "an overt behavioral syndrome or style of living characterized by extremes of competitiveness striving for achievement, aggressiveness sometimes stringently expressed, waste impatience restlessness, hyper-alertness, explosiveness of speech, tenseness of facial musculature feelings of being under the pressure of home and under the challenge of responsibility."

Persons having this pattern are often so deeply committed to their vocation or profession that other aspects of their lives are relatively neglected. The pattern is the effect of a challenging situation on a person with a character predisposed to such responses. Different kinds of situations evoke maximal reaction from different persons. It misleads the "work addict" who is hyperactive as a defense against underlying depression, one not satisfied with work alone, a perfectionist who cannot sit down and relax when there is no work. The individual is usually fussy about tidiness, discipline, not easy going in every day life, one who gives the clinical impression of being tense, competitive and concerned for status.

All studies with rare exceptions, thus lead to the trend that anxiety and neuroticism appear to precede CHD and especially angina pectoris with greater frequency than are found in healthy control samples. This has been noted in numerous prospective studies using psychologic tests. Once myocardial infarction or angina pectoris emerges these further heighten the degree of anxiety in patients and further break down ego defenses. Excessive use of denial and repression as a defense mechanism has also been widely reported. Somatic preoccupation and perhaps also a lower pain threshold characterizes the person in whom angina pectoris or continuing chest pain after myocardial infarction later develops.

Manifest anxiety may be concealed to the extent that denial and repression are successful. Accordingly, a clearer picture of both the prospective and retrospective involvement of affect and denial would be obtained if future research into the psychodynamics attending CHD would deal specifically first with an estimate of the amount of manifest anxiety, if a description were obtained of the type and level of activity of defense mechanisms. This should make possible an estimate of the total amount of underlying anxiety. There is also need for the use of standard psychiatric or psychologic method to obtain the above data.

Life's dissatisfactions and environmental stresses have repeatedly been found more prevalent in patients with CHD but as Jenkins points out, most of these studies have depended on retrospective data. What especially requires prospective study are family conflicts, work dissatisfactions, deeply felt losses, and job overload. There is, however, sufficient evidence of the re-

liability and validity of the behavior pattern as closely linked to CHD. In fact that myocardial infarction and angina pectoris may be distinctive pathologic states associated with psychologic and social factors cannot be ignored in future epidemiologic studies of CHD.

From now on it may be expected that behavioral patterns will be taken into account in field trials of coronary prevention programs in much the same way that other risk factors must be considered. To be sure, some of the sociologic factors may not be subject to change, much like family history or diabetes. Other variables like the coronary prone behavior type or excessive denial, however, may be amenable to change. This should not be any more difficult as getting cigarette smokers to give up the habit permanently or getting heavy eaters to remain on a restrictive diet.

Research workers within behavioral epidemiology need to find answers to several questions: what is relation of social mobility to family conflict? Is one more likely to result in anxiety than the other? Is it the one, the other, or the combination resulting in anxiety that is most important in altering the risk of CHD? Is the coronary-prone behavior pattern an alternative to denial in coping with stress? Do these "behavioral risk factors" raise the chances of CHD by elevating traditional risk factors or do they work through other mechanisms such as catecholamines or hormones altering membranes of intimal cells.

The time has come to shift the emphasis from descriptive data gathering of which a broad foundation of findings has been amassed, to tightly designed inferential studies. As of now, our present knowledge of social and psychologic factors in CHD is still too rudimentary to permit comments on the implications of these findings for control programs.—L.H.N.

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Progress In Genetic Research: II

The dangers from genetics seem to be very small compared with the immense potential benefits. Nevertheless, they do exist. Its application could conceivably be used wisely and even

malevolently. Such potential abuses cannot be prevented by curtailing genetic research. For one thing, we already have on hand a powerful tool (selective breeding) that could be used to influence gene pool and this technique could be used as wisely or unwisely as any future additional technique.¹ Moreover, the greatest fear is that some tyrant might use genetic tools to regulate human behavior and especially to depress the potential of some people.² However, it is important to note that we already have on hand pharmacological, surgical, nutritional and psychological methods that could generate problems much sooner. Clearly we shall have to struggle in a crowded unsettled world to prevent such a horrifying misuse of science and to preserve and promote the ideal of universal human dignity.

If we succeed in developing suitable controls we can expect to apply them to any later developments in genetics. If we fail, as we may, then limitations on the progress of genetics will not help. If in panic our society should curtail fundamental genetic research we would pay a huge price. We would slow our current progress in recognizing defective genes and preventing their spread and we would block the possibility of learning to repair genetic defects. The sacrifice would be even greater in the field of cancer for we are on the threshold of a revolutionary improvement in the control of these malignant hereditary changes in somatic cells. Furthermore, this achievement will depend on the same fundamental research that also contributes to the possibility of cloning and of gene transfer in man.

It is also hardly necessary to note the long and continuing record of nonmedical benefits from genetics, including increased production and improved quality of livestock and crops. Then there is steadier production based on resistance to infection, vastly increased yields in antibiotics and other industrial fermentations. Far from least is the pride that mankind can feel in one of its most imaginative and cultural achievements: understanding of some of our most fundamental aspects of our physical nature and that of the living world around us.

While specific curtailment of genetic research thus seems impossible to justify we should also consider the broader proposal³ that we may have to limit the rate of progress in science in general if we wish to prevent new powers from developing faster than an inadequate intellec-

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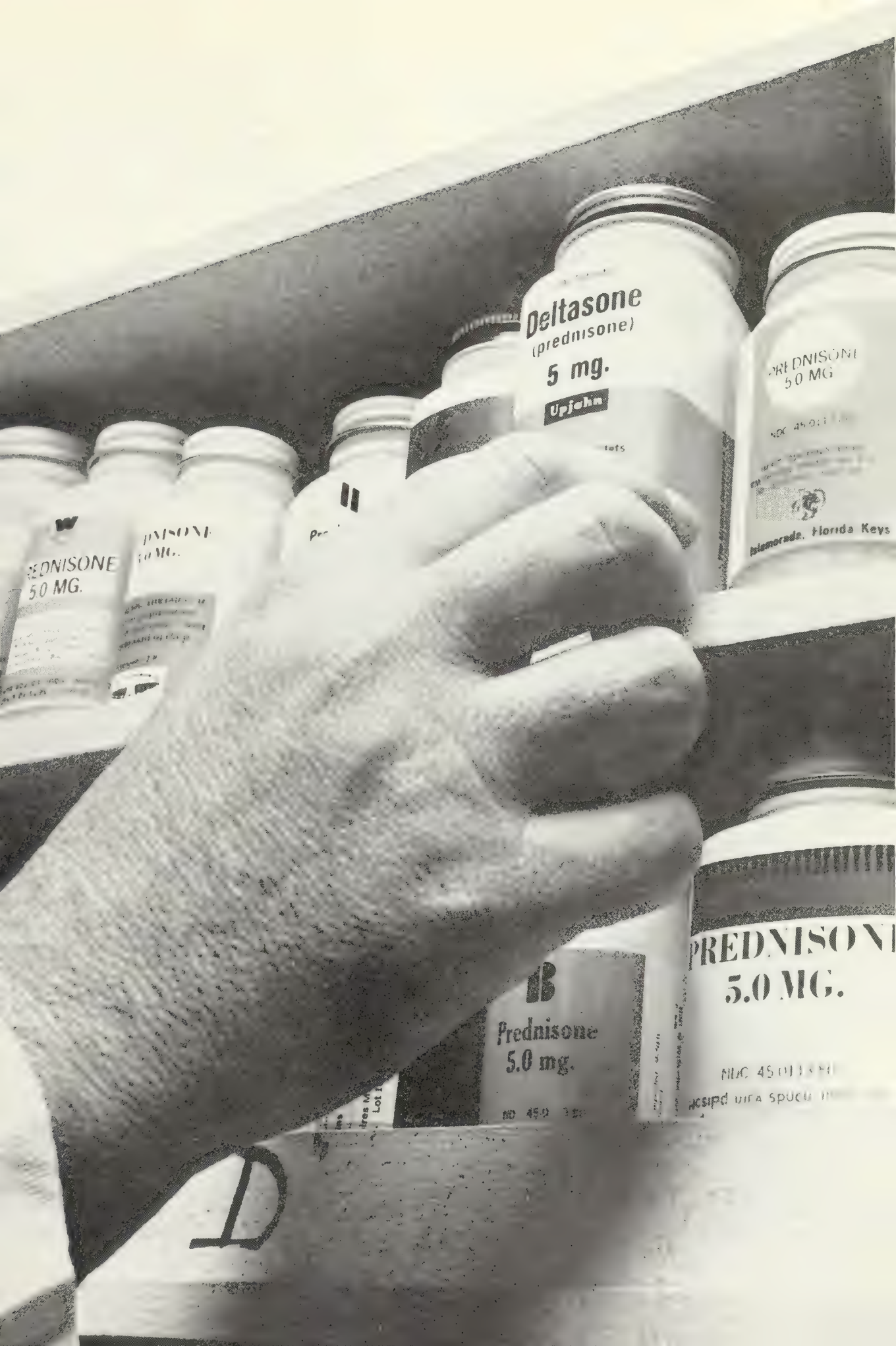
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Contraindications: As for all other corticoids. *Considered Absolute*—herpes simplex keratitis, acute psychoses and latent, healed or active tuberculosis. May be lifesaving in certain cases of pulmonary or meningeal tuberculosis, but should be used only in conjunction with adequate and effective antituberculous therapy to which causative organisms are shown to be sensitive. *Considered Relative*—active or latent peptic ulcer, Cushing's syndrome, diverticulitis, fresh intestinal anastomoses, osteoporosis, renal insufficiency, thromboembolic tendencies, psychotic tendencies, diabetes mellitus, hypertension, local or systemic infections including vaccination, varicella and other exanthematous diseases, and fungal infections, and, pregnancy particularly during the first trimester because of observation of fetal anomalies in experimental animals. If necessary to give corticosteroids during pregnancy, watch newborn infants closely for signs of hypoadrenalism and institute appropriate therapy if signs appear.

If corticoids are used in the above conditions, weigh risks against benefits.

Precautions: Deltasone should be given only with full knowledge of characteristic activity of and varied responses to corticoids. Because of inhibiting effect on fibroplasia, corticoids may mask signs of and enhance spread of infection; hence, watch patients closely, and if intercurrent infection occurs, control with appropriate antibacterial measures. If possible, avoid abrupt cessation of corticosteroid therapy because of the danger of superimposing adrenocortical insufficiency on the infectious process. Prolonged hormone therapy usually causes a reduction in the activity and size of the adrenal cortex. When discontinuing therapy, relative adrenocortical insufficiency may be avoided by gradual reduction of dose. However, a potentially critical degree of insufficiency may persist asymptotically for some time even after gradual discontinuation of adrenocortical steroids. Therefore, if a patient is subjected to significant stress, such as surgery, trauma, or severe illness while being treated, or within one year (occasionally up to two years) after treatment has been terminated, hormone therapy should be augmented or reinstituted and continued for the duration of the stress and immediately following it. Since mineralocorticoid secretion may be impaired, salt and/or desoxycorticosterone should be administered conjunctively. It is preferable to use a soluble hormone preparation in the immediate preoperative and postoperative periods.

Although unlikely with Deltasone, average and large doses of corticosteroids can cause elevation of blood pressure, salt and water retention and increased potassium and calcium excretion. Dietary salt restriction and potassium supplementation may be necessary. Glucocorticoid steroids may aggravate diabetes mellitus so that higher insulin dosage may become necessary or manifestations of latent diabetes mellitus may be precipitated. Corticosteroids may aggravate myasthenic symptoms in myasthenia gravis and should be given with proper precautions.

Muscle weakness, in some instances, attributed to hypopotassemia, has been reported following prolonged systemically administered corticoids. Excessive potassium loss, like excessive sodium retention, is not likely to be induced with effective mainte-

nance doses of Deltasone (prednisone), however, keep this effect in mind and perform periodic serum potassium determinations in patients on prolonged corticoid therapy. Muscle weakness occurring with normal serum potassium levels may be due to disturbance in muscle metabolism. Severe myopathy is associated with substantial doses of steroids for prolonged periods, and evidence indicates it occurs more frequently with 9- α -fluoro steroids. Replacement with non-fluorinated steroid has, in some instances, resulted in improvement.

Retardation of linear growth, roughly proportional to dose, has been noted in children on corticoids for six months or more. Following cessation of therapy, growth rate may be accelerated. Therefore, carefully observe growth of children on prolonged corticoid and if growth is retarded, reduce dose sufficiently to permit recovery before epiphyseal closure. Make every effort to avoid corticoids during pregnancy, since spontaneous remission of some diseases such as rheumatoid arthritis may occur. Long term corticoid therapy may evoke hyperacidity or peptic ulcer, therefore, as prophylaxis, an ulcer regimen and antacid are highly recommended. Take X-rays in peptic ulcer patients complaining of gastric distress, and, whether or not changes are noted, an ulcer regimen is recommended. Since prednisone causes less salt and water retention than many other glucocorticoids, patients should be observed closely for development of undesirable hormonal effects that are less obvious indications of steroid toxicity than edema and hypertension due to salt and water retention. Continued supervision of patients after cessation of therapy is essential, since there may be a sudden reappearance of severe disease manifestation.

Adverse Reactions: Adverse reactions associated with use of corticoids include: Cushing's syndrome, moon facies, supraclavicular fat pads, hirsutism, striae and acne; relative adrenocortical insufficiency particularly in time of stress due to trauma, surgery or severe illness; protein catabolism with negative nitrogen balance; electrolyte imbalance; alteration of glucose metabolism with aggravation of diabetes mellitus including hyperglycemia and glycosuria; osteoporosis reversible only with difficulty; spontaneous fractures; aseptic necrosis of the hip and humerus; activation and complication of peptic ulcer including perforation and hemorrhage; aggravation or masking of infection; increased blood pressure; convulsions; petechiae and purpura; menstrual irregularities including amenorrhea, spotting or prolonged bleeding; insomnia; psychic disturbances especially abnormal euphoria; nervousness; posterior subcapsular cataracts occasionally requiring extraction; increased intraocular tension; increased intracranial pressure with papilledema (pseudotumor cerebri); pancreatitis; necrotizing angitis; thinning of scalp hair; suppression of growth in children; thromboembolic complications; facial erythema; allergic skin reactions; ulcerative esophagitis; sweating; vertigo; weakness; myopathy; headache; exophthalmos. Adverse reactions are usually reversible and usually disappear when drug is discontinued.

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tual framework can be adjusted to handle them. The application of such a doctrine in our present situation we think would be dangerous. We have no way of determining what an optimum rate would be. Recently we have become aware generally of the need to assess and control the true social and environmental costs of various uses of technology. Recognition of a problem is the first step towards its solution and now that we have taken this step it would seem reasonable to assume until found otherwise that further scientific advances can contribute to the solution faster than it would expand the problems.

Another consideration is that we cannot destroy the knowledge we already have, despite its potential for abuse. We cannot unlearn the scientific method which is available for all who wish to wrest secrets from nature. If we should choose to curtail fundamental research in fear of possible long range applications, other societies may make a different choice. Knowledge is power and power can be used for good or evil. As Davis² points out "since the genie that brings new knowledge is already out of the bottle we must learn to direct the use of the resulting power rather than curse the genie or try to confine him."

We cannot see how far the use of science as a scapegoat for many of our social problems will extend. However, the gravity of the threat is there. Another politically based attack on science in the Soviet Union, Lysenkoism, utterly destroyed their genetics and seriously crippled their agriculture from 1935 to 1965. Such a development ironically illustrates the unstable relation between political and scientific ideas. Over 100 years ago Karl Marx was not given permission by his publishers to dedicate the second volume of *Das Kapital* to Charles Darwin.⁴ The current attacks on genetics from the New Left, also politically motivated, can build on and have no doubt contributed to the widespread public anxiety concerning gene technology.

Even a genuinely humane group in a recent report prepared for the American Friends Service Committee⁵ is altogether opposed to attempted genetic intervention including the cure of hereditary diseases. At the same time it is open and thoughtful on such questions as contraception, abortion, and prolongation of the period of dying. Of course we must stand firm upon pursuing genetics in the face of current attacks. Genetics has survived attacks from the

Communist Party in Moscow and from fundamentalists in Tennessee.

If we wish to avert the danger of some degree of Lysenkoism in our country we may have to defend vigorously the value of objective and verifiable knowledge, especially when it comes into conflict with political, theological and sociological dogmas.—L.H.N.

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Science Tools: External Counter Pulsation In Cardiogenic Shock

A common denominator in shock regardless of the mechanism which induces the syndrome is the reduction in blood flow and the resulting disturbance in tissue oxygenation. Thus shock can be produced by interference with either venous return or the cardiac performance.

Impairments of venous return are usually the result of an imbalance between blood volume and vascular capacity and can be caused by decreases in volume as in hemorrhage or increases in capacity as in endotoxic shock. When the insult causing shock is not severe the various compensatory mechanisms can serve to maintain the circulation. If shock is severe and protracted however, the circulation may deteriorate progressively and then it may enter the decompensatory stage. Since compensatory and decompensatory changes in all forms of shock have flow reductions as a common denominator a method to increase blood flow should prevent the metabolic changes in tissues due to oxygen lack.

Dr. Soroff and his associates have just created a device to improve the blood flow in lower limbs. It consists of a rubberized nylon sleeve which fits over the legs and is filled with warm water. The sleeve is actually the inner lining of a metal jacket which is subjected to hydraulic pulsations synchronized with the R-wave signals

from an electrocardiogram. The patient's legs are squeezed during diastole, forcing arterial blood back into the coronary arteries during a period when the heart is relaxed.

The cardiac output is increased also. Blood is forced back to the heart augmenting venous return. In effect the patient is being transfused with his own blood. The inventors hoped that increasing the pressure may force open collateral vessels. This, in fact, was found in experimentally induced infarcts in animals in whom there developed an increase in coronary collateral circulation. No side-effects or complications have been observed during this external counterpulsation.¹

At the same American Heart Association meeting in Atlantic City where Dr. Soroff and his associates reported the new device, Dr. T. J. Ryan reported on some hemodynamic effects of external counterpulsation during right and left heart catheterization on eight patients. During counterpulsation there was a 19 percent increase in mean diastolic pressure, but no increase in mean systolic pressure. Cardiac output rose an average of 38 percent in 6 patients at the same time the work load of the ventricle was not increased and no evidence of a change in myocardial oxygen consumption occurred. There was no surgical trauma, risk of sepsis, or problems with intravascular coagulation.

The device was used on seven moribund patients who had been in cardiogenic shock for an average of 70 hours. Two of the seven were pulled right out of shock but died several weeks later from pneumonia. The other five survived up to two days, showed an improvement in hemodynamic function, color, blood pressure and they started to put out urine even though they were in the decompensatory stage of shock.

We look forward to the results of the clinical trials in four hospitals in Boston where the device is to be tried on patients with myocardial infarction, patients in cardiogenic shock and others with severe coronary artery disease including angina.—L.H.N.

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What Is The Hazard Of Natural Death At The Wheel

Sudden death from natural causes occurs occasionally in drivers of motor vehicles. This fact

has prompted some physicians to urge restriction of driving privileges of persons with heart disease. Such restrictions are not justified unless they will result in greater safety. Does natural death at the wheel really pose a threat to public safety by causing collisions that are likely to kill or injure people severely? The consequences of these collisions should be considered in the process of decisions or restrictive legislation, costly programs involving medical examination of drivers or requirements that patients with heart disease be reported to motor vehicle agencies.

Baker and Spitz¹ addressed themselves to the frequency with which presumably healthy drivers or pedestrians are fatally injured in crashes as a result of the natural deaths of others at the wheel. This approach involved identification of traffic fatalities and determination of whether any of these "accidental" deaths could have been related to the natural death of a driver. Of 226 collisions caused by natural causes at the wheel no one else was killed except in one accident involving a drunken driver. Occasionally severe injuries to a driver make it impossible to determine whether a pathologic condition actually precipitated a collision. Baker and Spitz cite two examples, a patient with a ruptured aortic aneurysm and another with a ruptured congenital basilar aneurysm in which they could have been caused by the crash or resulted from a crash.

If collisions from natural deaths do not seriously threaten others the primary purpose in attempting to restrict drivers in question would be to prolong their own lives. Although it has been suggested that driving may actually precipitate coronary episodes² there is no evidence that patients with heart disease would live longer if not allowed to drive. Replacement of the stimulation of driving by the exertion or frustration involved in alternate modes of travel might in fact have the opposite effect from that desired. Under the conditions prevailing in many large cities driving oneself to work may be the least stressful way to reach work.

Undue concern about natural death in drivers may be created by the tendency to express the frequency of these occurrences as a proportion of all drivers' deaths associated with collisions. These are not "fatal collisions" in that drivers who die of natural causes are not "killed" and despite the concern that has been aroused in

these crashes they are unlikely to cause death to others. Accordingly, the number of collisions resulting from natural deaths in drivers should more properly be expressed in relation to the total number of collisions of all types.

Police records reveal that during the four year period of the study of Peterson and Petty³ approximately 71,000 traffic accidents were reported in Baltimore City. From these figures it can be calculated that the collisions that resulted from natural deaths in the same period constituted less than 6 per 10,000 accidents reported.

An important need today is for data on the causes of "high-cost" injuries so that safety expenditures may be related to major economic and human losses.⁴ The consequences of crashes resulting from natural deaths are negligible in comparison with the effects of crashes that *cause* deaths. The only crashes that had serious consequences to others and were reported to have been associated with natural deaths of drivers also involved high blood alcohol concentrations. Measures effective against drunken driving are unquestionably needed, whether or not a rare accident involves natural death as well as intoxicants (5.6).

Other studies have considered the possible relation between highway safety and medical conditions in drivers. However, they have not demonstrated that major accidents causing serious or fatal injuries to other persons are likely to result from medical impairment of drivers. In 1962 Haddon urged that restrictions based on medical examination of drivers await acceptable research evidence. Eight years later there still is no evidence that such examinations will reduce the number of highway casualties. Unless it is demonstrated that an appreciable proportion of major crashes result from medical impairment of drivers and that available criteria will indeed identify the drivers who are most likely to cause such crashes, reporting, screening and possibly restricting millions of drivers with conditions such as heart disease does not seem to be justified.

It is becoming increasingly evident that environmental control measures especially those aimed at reducing the frequency or severity of injury crashes offer better "pay-off" than measures aimed at preventing the crashes themselves, especially by controlling people. Highest priority should go therefore to such measures or better



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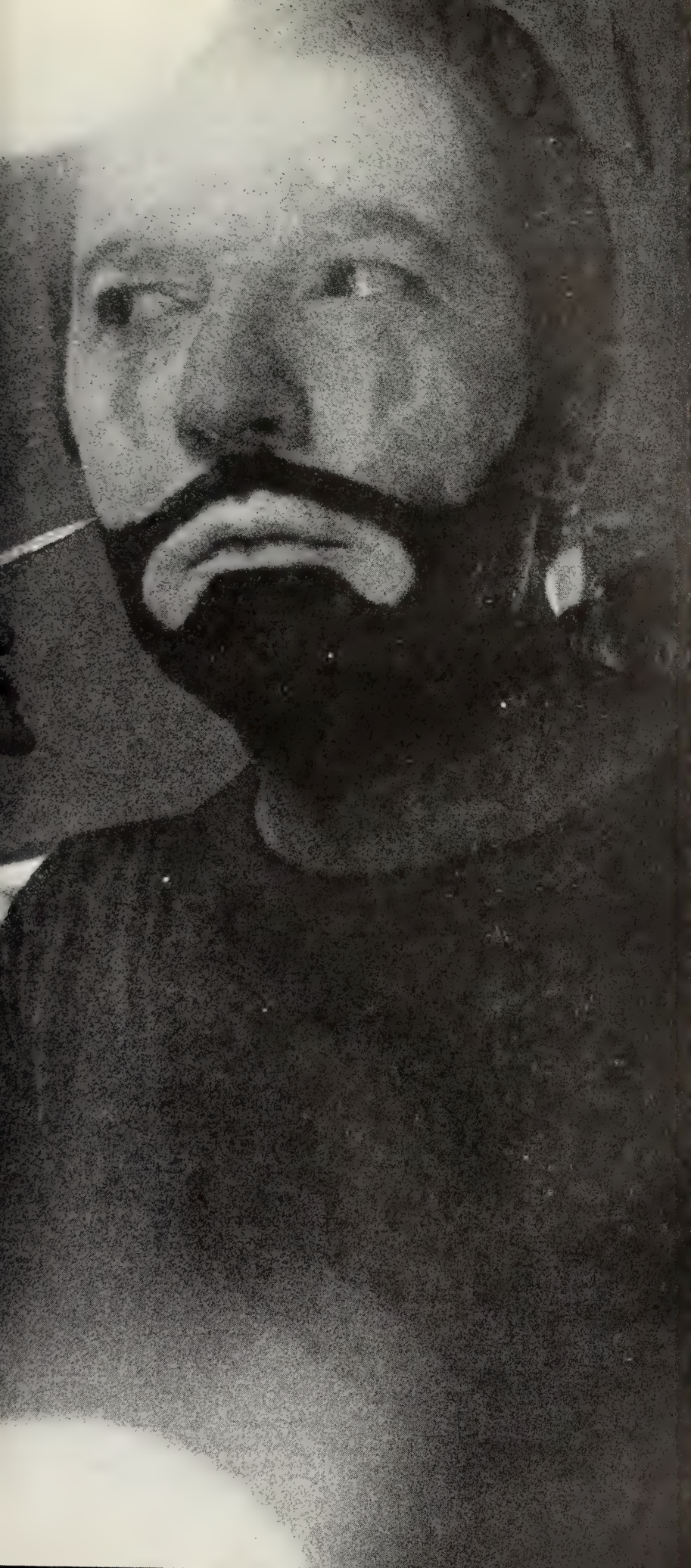
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Side Effects: The more common side effects, in order of incidence, are xerostomia, mydriasis, hesitancy of urination and gastric fullness.

Dosage: The maximal tolerated dosage is usually the most effective. For most adult patients this will be four to six 15-mg. tablets daily in divided doses. In severe conditions as many as two tablets four to six times daily may be required. Pro-Banthine is supplied as tablets of 15 mg., as prolonged-acting tablets of 30 mg. and, for parenteral use, as serum-type vials of 30 mg. The parenteral dose should be adjusted to the patient's requirement and may be up to 30 mg. or more every six hours, intramuscularly or intravenously.

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Side Effects: Dryness of the mouth, mydriasis, hesitancy of urination; less commonly extrapyramidal (restlessness, dystonia and signs of pseudoparkinsonism such as muscular rigidity, fixed facies, tremor, ataxia, festinant gait and drooling), parasympatholytic (blurred vision, xerostomia, hypotension, nasal congestion and constipation) and curare-like (loss of control of voluntary muscles, particularly the muscles of respiration) reactions. Rarely, leukopenia or allergic purpura. A generalized erythematous skin reaction may occur. Side effects characteristic of phenothiazines such as grand mal convulsions, altered cerebrospinal proteins, cerebral edema, potentiation of the effects of atropine, heat or phosphorus insecticides, autonomic reactions, endocrine disturbances, reversed epinephrine effect, hyperpyrexia or pigmentary retinopathy may theoretically occur but have not been reported with Dartal. Severe hypotension following recommended doses occurs more commonly in patients who are also afflicted by other medical disorders such as mitral insufficiency or pheochromocytoma, and particular attention should be paid to such a possibility although this has not been observed with Dartal.

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For Indications, Contraindications, Precautions, Side Effects and Dosage see Pro-Banthine. In addition, phenobarbital should be administered with caution to patients with liver disease, mental disturbances or a significant degree of hypoxia.

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protection of vehicle occupants removal of roadside hazards that maim and kill on collision, improvement of emergency services. But since a third of the 55,000 people fatally injured on the highways each year are problem drinkers impaired by alcohol at the time of their crashes, crashes involving problem drinkers also deserve the highest priority.—L.H.N.

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On Bird Navigation

Laysan albatrosses returned to Midway Island in the Pacific from Japan, Guam, Kwajalein, Oahu and Washington State. The last flight is 3,200 miles and took ten days. How do birds find their way traveling thousands of miles in lonely passage? It is a complicated process and Mathews' book¹ is a good comparison for long hours of profound but delightful thinking, attempting to clarify some of the facts that are known, although there is still no clear idea of how they do it.

In those species where the young migrate independently of the old, it has been proved that the birds' ability to navigate with considerable precision is not learned, but is a part of their innate behavior. Further, this ability does not depend on geographical or meteorological features that may prevent a familiar environmental pattern for piloting, for many different species show the same range and bearing tendencies when they are released in areas where they do not breed and where they are not normally found.

Migration continues, it seems, only while the 'drive' is present. Mathews describes experiments in which starlings were moved from the Netherlands to Spain and released in an area that is highly favored by the species as a wintering spot. The birds did not accept this and instead moved on across the width of Spain. Evidently young birds are genetically equipped with enough information to carry out bearing and distance navigation, possibly flying a series of courses. Older birds possess full navigational ability and are able to correct for displacements such as are produced by winds and storms.

For decades researchers have kidnapped generations of birds, badgered and prompted them like demanding schoolmasters, carted them off to strange lands, even inserted electrodes in their tiny brain or otherwise confused them as to their identity and whereabouts. But all we have is birds retaining clear knowledge of their mission and researchers with a body of confusing evidence and many theories. Among them are special physiological devices for divining the earth's gravitational, centrifugal or magnetic forces.

At one time it was believed that birds made their flight plans by "celestial navigation." With straight faces some proposed that missiles be guided by birds in the cockpit that would follow a celestial projection with its head. Sensitive electrodes were supposed to pick up the feathered bomber's neuromuscular signals and use them to control pitch and yaw commands. If all the years of research on bird navigation have not produced a satisfactory explanation for this talent, they have at least accumulated some fascinating data on the unique features of bird anatomy, physiology, features that must certainly have a bearing on their navigational ability.

For example the birds eye is found to be a very clever instrument for providing an artificial horizon. Mathews discusses this avian eye structure which is due to the shape of the central area of high cone density. In many birds of the open spaces this central area is elongated along the horizontal equator of the eye. He points out that such a design appears suited to fixation of the horizon permitting increase in sensitivity to vertical movements of objects in relation to the horizon. It seems to be the equivalent of an aircraft's artificial horizon.

A central problem in understanding bird navi-

gation undoubtedly is the extent to which birds can determine the vertical in flight, independent of vision. How do birds succeed in disentangling the effects of acceleration, rotation and other postural changes from the downward effect of gravity. Many authorities are emphatic in their belief that such an accomplishment is not possible, because human pilots when they are flying "blind" cannot do this.

But a bird is not an airplane and not a human and it appears there are neurophysiological controls that permit birds to keep their orientation despite loss of vision. In normal flight Mathews points out, a bird's head is remarkably stable and does not reflect the violent oscillations of the body in the wing section. In fact although it appears that birds can execute a full sideways roll over on their backs in flight, high speed films reveal that it is the body only that rolls through 180 degrees—while the head remains on an even keel, the normal way up!

It is not clear yet what such facts will contribute to the ultimate solution of the problem of bird navigation, but one cannot resist saying that research on this problem is still up in the air with no noticeable tendency that it will soon come down for a landing.—L.H.N.

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Correlation Between Concentration Of Testosterone And Other Hormones In The Plasma And REM Sleep

Two separate and distinct physiological states alternate regularly throughout the sleep period. A cycle of orthodox or "slow wave sleep" which is characterized by slow waves and steep spindles in the EEG regularity of most physiological variables and relative absence of mental activity occupies the first 60-90 minutes. It is succeeded by a period of paradoxical or rapid eye movement (REM) sleep in which large jerking eye movements occur against a lower voltage EEG background. Irregularity of physiological variables is striking and reports of dream activity frequently occur retrospectively. A cycle of slow wave sleep occupies the first 90 minutes and REM sleep constitutes a mean of 24 percent of total sleep in adults.

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In man several studies have demonstrated diurnal variations with a morning peak in plasma testosterone the most potent naturally occurring androgen. Diurnal changes and fluctuations in circulating concentrations of other hormones have been studied more extensively. Concentrations of cortico steroids also have a morning peak. During sleep they remain low until 4-8 a.m. when they reach a series of successive peaks which create the morning rise. Recent studies have confirmed that it is possible to dissociate these peaks from sleep.

Concentrations of growth hormone in plasma have, on the contrary, been shown to be closely associated with a component of normal sleep and an increase in concentration of this hormone persists when the subject sleeps during the day. The serious disturbance of diurnal variation of testosterone when routines of sleep and wakefulness were disorganized suggested that the overnight concentrations of testosterone were linked to sleep.

In a recent report in *Nature*¹ Evans, et al., have examined the relationship of testosterone and sleep cycles in 5 healthy male subjects 19-45 years of age. They attended the sleep laboratory at intervals during a 4 month period. Electrodes were attached to the scalp, around the eyes, and on the neck, so that eye movements, EEG, muscle tone and pulse rate could be monitored continuously overnight. Blood was drawn from a venous catheter at a mean interval of 30 minutes and an average of 18 samples were obtained per subject per night. Plasma testosterone concentrations were measured by a competitive protein binding method.

All subjects showed evidence of an over-all increase in plasma testosterone on almost every night. The slope of the increase varied between subjects and within succeeding subject nights but the trend remained. Fluctuations of plasma testosterone concentrations were superimposed on the general upward trend. A decline was usual during the initial cycle of slow wave sleep, after which successive peaks in the plasma concentration of hormone created a stepwise increase during the night. Occasional samples taken close together revealed a dramatic increase which could only be explained by active secretion.

Peaks of testosterone occurred in conjunction with or adjacent to periods of REM sleep and sometimes if the subject awoke when such a period was due, increase in testosterone was evi-

dent. Arousal and sudden shifts toward arousal were also often associated with an increase in plasma testosterone. In one subject sleep during the day was accompanied on several occasions by a typical increase in testosterone which reversed the normal diurnal trend.

REM sleep clearly does not trigger the production of the hormone but the relationship suggests a link between the neurophysiological state underlying REM sleep and the mechanism regulating the production of testosterone. REM sleep is itself associated with penile tumescence and erection and on occasion a frankly erotic dream may give rise to an emission during REM sleep.

Inasmuch as testosterone is an anabolic hormone it may be involved in the restorative and reparative roles which have been suggested for REM sleep.—L.H.N.

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Medical Institute Established

(*Science* 171, 158, January 15, 1971). An Institute of Medicine within the National Academy of Sciences has been formally activated with the appointment of Robert J. Glaser, Vice President of the Commonwealth Fund in New York City as its acting president.

The Institute successor to the NAS Board of Medicine will conduct study programs relating to the delivery of health care and to medical education and research.

Charter membership presently totals 29 and is expected to reach 100 by the end of the year. The number of voting members will be limited to 400, at least one-fourth of whom will be drawn from other branches of science, law, government service, and administration.—L.H.N.

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Dr. T. A. Tice presented his results at the American Heart Association's 43rd scientific assembly in Atlantic City. Provided there are no serious complications, carefully planned left ventriculography, coronary arteriography and other appropriate studies should be performed in these patients with a view toward improving cardiac function by operation and removal of the scar. Strict adherence to criteria for operability will keep the risk within a very acceptable range. The operation may be too dangerous for patients over 65 years old and for patients with significant involvement of the ventricular septum significant mitral regurgitation or serious irreversible changes in other organs.

Of the 23 patients reported upon, 2 were operated upon for angina pectoris while 21 were operated upon primarily for congestive heart failure refractory to therapy. Two of the patients did not survive and 2 others died during the follow-up period of 3-36 months. The operations, besides resection of the myocardial infarction scar also involved right aortocoronary bypass grafts and right coronary left anterior descending bypass grafts were done in 3 patients. Five patients received myocardial implants, one an aortic valve replacement, another a mitral valve replacement and myocardial implant.

All patients except the two presenting with angina pectoris alone had also shown hemodynamic evidence of left ventricular failure. Following the operations, the left ventricular end-diastolic pressure fell from an average of 31 mm Hg to 17 mm Hg. The mean cardiac index for the patients rose from 1.8 liters/square meter/minute to 2.1. Pulmonary artery pressure also decreased. Low cardiac output was responsible for the two deaths which occurred in the immediate post-operative period. One of these two had had a large calcified aneurysm for seven years which involved a large part of the interventricular septum. He was in severe congestive heart failure at the time of the operation. The

two late deaths, 6 months and 32 months post-operation were not due to the surgery, but were caused in one instance by a fresh myocardial infarct and in another by pulmonary embolism.

Histologic studies of the excised scar tissue show that collagen and fibroblasts are major components. Old organized clots can be seen in the smaller vessels around the infarcted area and muscle fibers when present seem abnormal with large nuclei and almost no mitochondria, none of which were functional contractile vessels.

Because of the low morbidity and mortality associated with excision of myocardial scars, it is Dr. Tice's opinion that ventricular scars should probably be excised or plicated when discovered at the time of coronary bypass procedures. He advised use of inotropic support with isoproterenol or epinephrine for an average of 3 days after operation. Following excision the ventricular volume appeared to be adequate in almost all patients.

A moderate to marked improvement in symptoms has been observed in all but two of the long term survivors. All of the 21 patients, 60 percent of whom had previously required constant or frequent hospitalization were discharged from the hospital. Obviously heart failure patients after infarction are not hopeless, and surgery correctly perceived and executed may salvage a goodly proportion of them for useful living.—L.H.N.

Reference

1. Patients Improve After Infarct Scars Are Excised, JAMA 125, 382, January 18, 1971.

Towards A Department Of Gerontology

The problems of an aging population are increasingly before us. They are primarily concerned with diagnosis of disease, medical treatment and rehabilitation. In some countries more fundamental approaches to the aging process include research into the biology of aging, and the hope is that with a clearer understanding of the physiology and biochemistry, aging less will have to be done in treatment and rehabilitation. It is self-evident that these two aspects cannot easily be separated since age brings on increasing liability to multiple diseases and conversely disease may accelerate the aging process. Much more research needs to be done into the biological assessment of age if we are to understand aging in man or attempt to decrease its morbidity or evaluate drugs which may delay the process.

How to assess age biologically involves many problems and several students have directed their attention to some of the methods that might be used. We recognize that there are two main groups of age change. The brain and the eye cannot renew their cells so that age changes develop before growth is complete. Neurons are thought to be lost from age 5 onwards¹ and the range of accommodation of the eye declines between the ages of 8 to 50.²

In other organs function declines from the point of full growth. Vital capacity cardiac output, gastric juice secretion, renal function, and muscular strength, decline steadily with age. In studying the aging process, the problem is to choose functions least affected by concurrent disease. For example, renal function is not a very reliable mirror of the aging process unless one eliminates pyelonephritis which is relatively common in old age.

The usual clinical judgment of aging is based on appearance, stature, posture, gait, hair, muscle, skin, and mental awareness. But these are often misleading, and besides, are difficult to measure. Intellectual performance shows a steady fall off with age. That many reach their highest imaginative creativity between age 25 and 35 is well documented. Other intellectual functions become difficult to measure and to be attributable to the aging process per se, because cerebral vascular disease and senile psychosis and now normal pressure hydrocephalus may cause brain damage and make interpretation difficult. Similarly, the claimed decline in total body potassium with age may not be easy to evaluate.³ Sir Macfarlane Burnet suggests that the surveillance mechanism may reduce with age through exhaustion of the cell quota of the thymus dependent system, leading to a reduced capacity to deal with infection and neoplastic change.

The selection of cases for study presents a further problem. Genetic and environmental differences must be considered. The age group chosen needs careful thought. Perhaps attention should be better directed to the period when rapid aging takes place, rather than to an age when many of the changes have already happened. If we study very old people we need to recall Dr. A. N. Exton-Smith's phrase, very old people constitute a "biological elite" who have escaped the causes of death which have affected the less vigorous.

The traditional approaches of the epidemiologist are also beset with serious difficulties. Cross-sectional studies based on different age groups investigated at the same time can mislead because a 90 year old today has been exposed to very different historical and environmental factors than those affecting the 50 year old. Then there is the factor of follow-up which is needed for longitudinal studies and which requires an increased degree of longevity in the investigator also.

Bourhere² has chosen an interesting combination of the cross-sectional and the longitudinal. One finding was the decline in performance between ages 60-65 was less than expected. Such results certainly should encourage those who feel that the retirement age now is too low.

The development of geriatrics has already made important contributions to the health and welfare of the aged. It need, however, not overshadow the need for basic gerontological research. It is time to establish in the university an institute or a Department of Gerontology. —L.H.N.

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Salvaging The Hypoxic Myocardium

The energy demands of the heart are so great that approximately 75 per cent of the available coronary arterial oxygen is taken up and consumed. The transport of ions and intracellular synthetic processes utilizes 20-40% of the energy from oxidation while the remainder provides energy for contraction. Oxidation of free fatty acids (FFA) provides most of the energy required by the myocardium. When blood glucose and insulin levels are elevated as in the post prandial state plasma FFA concentration declines and glucose becomes the major cardiac fuel. Glucose and its storage form glycogen are unique in that they may supply energy to the cell in the presence or absence of oxygen.¹

The preservation of cellular viability is critically dependent upon continued energy production. There has been no general agreement as to

which substrate can best support the cell during hypoxic stress. The major route for the production of energy in the hypoxic cell is that of lactic acid formation from glucose. Lactic acid is freely diffusible and the glycolytic reaction and production of ATP continue as long as glucose remains available. Thus one can maintain performance and recoverability in an isolated rat heart deprived of oxygen as long as glucose is furnished to it. The myocardial ultrastructure is preserved there is enhanced electrical and mechanical performance but a notable increase in lactic acid production.²

The myocardium is able to adapt to conditions of relatively mild ischemia. However, complete cessation of coronary perfusion results in a sequence of events leading to irreversible tissue damage and eventual cellular death. According to present estimates, total energy stores of the infarcted area are depleted to within 5-15 minutes. Besides depletion of reserve energy sources, the lactic acid produced by the glycolytic degradation of glycogen can cause a critical fall in pH with resulting intracellular acidosis. The lowered pH triggers release and activation of catabolic lysosomal enzymes with resultant disruption of mitochondrial and cell membrane soluble enzymes SGOT LDH and CPK normally used in intracellular metabolic reactions leak through the damaged membranes. As the nucleus is destroyed cellular reparative capacity is lost and only fibrous replacement of the myocardial tissue is possible.

What then is the potential for metabolic preservation of ischemic heart tissue? Recent research in the treatment of patients with myocardial infarction has centered largely on the management of electrical disturbances and deficient cardiac performance by pharmacologic

and mechanical means. Relatively little attention has been focused on the treatment of the myocardial energy deficit per se. It is apparent that the eventual functional performance of the infarcted myocardium is inversely related to the amount of scar tissue produced.

Most infarcts are surrounded by ischemic tissue (concussed area) and its fate is an important determinant of the relative mass of functional myocardial tissue which remains following infarction. Restoring viability to this zone is possible through collateral circulation or through lysis of an involved thrombus.³ In addition it is theoretically possible that metabolic support for this partially ischemic tissue could also prove chemically beneficial. Sodi-Pallares⁴ has reported that administration of a buffered solution of KCL, glucose and insulin decreased the severity and duration of ECG changes and helped to suppress arrhythmias in patients with myocardial infarction. He suggested that this "polarizing" solution acted by increasing potassium uptake by the myocardial cell.

Subsequent studies on the effects of polarizing solutions have offered conflicting evidence so that no definitive answer as to the clinical effectiveness of this treatment has been forthcoming. On the basis of experimental evidence it might be deduced that metabolic support offered by glucose in areas of hypoxic myocardium surrounding the area of total ischemia might improve viability and survival of tissue. Insulin may also achieve beneficial metabolic effects in the hypoxic myocardial tissue. Aside from its well documented ability to facilitate the transfer of glucose into the cell insulin suppresses fatty acid release from adipose tissue. The resulting decrease in serum FFA would help limit the accumulation of neutral lipid droplets in

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ischemic myocardial tissue. Insulin produces a significant increase in myocardial protein synthesis. However, to date the potentially useful effects of insulin and glucose have not been subjected to careful clinical testing.

The administration of fatty acids in whatever form may actually be injurious to the hypoxic myocardial cell since in the presence of extracellular FFA there is a significant depression in myocardial contractile performance during periods of hypoxia or anoxia and an impairment in recoverability in contractile force during a subsequent period of re-oxygenation. Anabolic reaction sequences essential to the healing process can be activated following ischemic myocardial injury, however current evidence suggests that the protein synthetic mechanisms are initiated almost immediately after onset of myocardial anoxia and ischemia.⁵ As yet, there is no experimental data clarifying whether the newly synthesized protein is produced in viable cardiac cell or in adjacent fibrous tissue.

The potential clinical benefits in using specific metabolic interventions to enhance these synthetic processes are in the earliest stage of investigation. It is axiomatic that the evolution of a logical approach to therapy is dependent upon a thorough understanding of basic alterations in cellular function.

Recent years have witnessed an expanding base of knowledge relative to the physiological and biochemical processes involved in ischemic heart disease. One can only hope that among the several hypothetical possibilities for improved therapy a better approach to the metabolic management of the acute stages of this disease will develop.—L.H.N.

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Neck And Shoulder Pain Associated With Use of Bifocals

(*JAMA*: 214, 44, October 5, 1970) For some people bifocals can literally be a pain in the neck. In 25 patients onset of neck and arm pain coincided with the recent acquisition of bifocal glasses reported Dr. Ernest Johnson and Claire R. Wolfe.

Onset of the pain usually occurs within 2-4 weeks after the patient starts wearing bifocals. So does changing to bifocals. Treatment with heat and traction helps but the best therapy is avoidance of overextension and extensive rotation of the cervical spine.

The severity of the pain is related to pre-existing osteoarthritic changes, the position of the reading segment and the duration and degree of cervical spine overextension. The most common radiculopathy occurred at C-6, C-7 levels.—L.H.N.

Oral Vaccine Against Typhoid

(*JAMA* 214, 991, November 9, 1970) Multiple doses of an oral vaccine consisting of live attenuated typhoid bacilli may lead to successful intestinal immunization against typhoid fever. This approach is encouraged by the fact that bacillary dysentery can be prevented by immunization with oral live shigella vaccine.

Dr. Hornick and DuPont delivered a living streptomycindependent *Salmonella typhi* vaccine to healthy adult male inmates of the Maryland House of Correction at Jessup. It was given in 4-6 doses each containing 30-100 billion cells.

These patients were then challenged with an oral dose of 100,000 virulent *S typhi* bacilli and 17% developed typhoid as against 50 per cent of non-vaccinated men.

The advantage of a live oral over a parenteral vaccine are immunization of local and systemic postvaccine reactions, direct stimulation of the local intestinal immune reaction, and generally better immunization against proliferation of the virulent organism.—L.H.N.

Safe Car

(*Science*. 169, 262, July 17, 1970). The National Highway Safety Bureau has asked General Motors, Ford, and Chrysler to develop an Experimental Safety Vehicle. The cars will be five-passenger family sedans with many new unproven modifications, all designed to enable the occupants to avoid accidents or to survive them in much better shape than is currently possible. The cars should be ready in 28 months.—L.H.N.

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SUMMARY OF ACTIONS COUNCIL MEETING

Wednesday, February 24, 1971

I. Attendance

Present in addition to the Chairman, Dr. S. J. Martin, were: Drs. Granoff, Weber, Jr., Grendon, Burnham, Edson, Abbot, Dean, Gardner, Fabro, Rem, Cramer, Ragland, Jr. Harwood, Pelz, Wilson, Roch, Nemoitin, Van Syckle, Friedberg, Johnson, Harkins, LaBella, Freedman, Root, Jr., vonGlahn, Purnell, Klare, Hess and Bradley.

Also present were: Mrs. Lindquist, Mr. Donelan (AMA), Dr. Patterson, (UConn Medical School), Mr. Gordon (HMCA), Mr. Olson (FCMA), Mr. Tomat, Mr. Sullivan and Dr. Richards.

Absent were: Drs. Brandon and Palomba.

II. Routine Business

Approval of Minutes

As printed and distributed, it was VOTED to approve the minutes of the meeting of January 21, 1971.

Life Memberships

It was VOTED to approve applications for Life Membership received from the following eligible Active Members:

Oliver B. Andrus, 871 East Broadway, Milford (NHCMA)—1971

Milton J. Cole, 99 Pratt Street, Hartford (HCMA)—1971

Michael A. Corcoran, Westfield Manor, Meriden (HCMA)—1971

Felice M. Emery, 315 Whitney Avenue, New Haven (NHCMA)—1971

Albert E. Herrmann, 87 North Main Street, Waterbury (NHCMA)—1971

John F. Kilgus, Jr., 42 Sunrise Drive, Avon (LCMA)—1971

Maurice Levinsky, 1425 Noble Avenue, Bridgeport (FCMA)—1971

Joseph A. Mekrut, 569 East Main Street, Meriden (NHCMA)—1971

Harold F. Morrill, 300 West Main Street, Waterbury (NHCMA)—1971

Harry G. Moss, 646 Dixwell Avenue, New Haven (NHCMA)—1971

Richard Newman, Old Racebrook Road, Woodbridge (NHCMA)—1971

George J. Piazza, 690 Howard Avenue, New Haven (NHCMA)—1971

William Schneider, 72 Orchard Street, Rockville (TCMA)—1971

Philip E. Schwartz, 195 South Main Street, Middletown (MCMA)—1971

Louis Soreff, East Hampton, (MCMA)—1971

Nathan Spector, 59 Church Street, Willimantic (WCMA)—1971

Leon O. Spencer, 410 42nd Avenue, North, Myrtle Beach, So. Caroline (NHCMA)—1971

Date of Next Meeting

In order to avoid conflict with annual meetings of the component County Medical Associations and scheduled functions, the next meeting of the Council will be held on Friday, March 26, 1971.

III. Old, New and Special Business

Election of Student Members

It was VOTED to elect to Student Membership five Connecticut residents who are attending American medical schools. A list of those elected will be published in the Journal.

Resignations, Appointments, Etc.

(a) *Member-at-Large, Judicial Committee:* It was VOTED to appoint Andrew J. Canzonetti, New Britain, as an at-large member of the Judicial Committee to complete the unexpired term (1968-72) of Ralph L. Gilman, Storrs, resigned.

(b) *Board of Examiners of Hypertrichologists:* It was VOTED to nominate Melvin P. Coolidge, Bridgeport, for appointment to this Board by the Governor, as a replacement for William

B. Swarts, Greenwich, resigned. Dr. Coolidge will complete Dr. Swarts' term of 7/1/69 to 6/30/72. As required by statute, the nominee is a Board-certified dermatologist.

- (c) *CRMP Advisory Board*: It was VOTED to designate Carl W. Johnson, Thompsonville, to succeed himself for an additional term of three years (1/1/71-12/30/74) as a CSMS-designated member of the CRMP Advisory Board.

Communication—CSMS Section on Orthopaedics

It was VOTED to accept as information a communication received from the officers of the CSMS Section on Orthopaedics concerning allegations that Podiatrists are performing, and receiving third party payments for, procedures which exceed the statutory limits of their licensure to practice podiatry. It was further VOTED to approve and implement the recommendation of the Section officers that this matter be brought to the attention of the Commissioner of Health for review and appropriate action.

In a related action, it was VOTED to approve the taking of legislative action in opposition to H.B. 6511, now before the General Assembly, which would amend the statutory definition of Podiatry to encompass surgery of more than minor nature and authorize invasion of the deep tissue of the foot and lower leg.

CRMP

- (a) *CRMP Advisory Board Minutes, Meeting of 1/7/71*: It was VOTED to accept these minutes, furnished by CRMP, as information. It was further VOTED to remind CRMP of its pledge to review, from time to time, the composition CRMP Advisory Board and Executive Committee with respect to the percentage of representation of various agency and individual interests, and to reiterate that the Society's previous position in this matter has remained unchanged; i.e., that the Society should "be made an equal partner to the University Deans and Medical Centers in the CRMP structure, and that at least one-third of the Advisory Board be made up of representatives formally designated by the Society" and, further, that the Society "should have equivalent representation on the Executive Committee of the Advisory Board"; also, that "representatives formally designated by the Society" would be practicing physicians representing the various types of general and special practice on a geographical basis.

- (b) *Resolution re CRMP "Third Faculty" Program*: With minor amendment, it was VOTED to adopt a subject resolution, introduced by Morris A. Granoff, New Haven, and to implement the distribution of copies thereof recommended in the final "RESOLVE". The resolution is attached to these minutes.

- (c) *Report of Ad Hoc Committee on CRMP Activities (and Related Matters)*: It was VOTED to accept a report filed by this Ad Hoc Committee concerning CRMP's "grand strategy" with respect to hospital and center based clinics vs. the private practitioner in the delivery of health care, and with respect to the present status and effectiveness of the CRMP "CUPISS" Program. At the conclusion of the report, the Committee proposed two subject resolutions and the Council VOTED to adopt them. Copies attached to these minutes.

It was further VOTED to send copies of these resolutions, with copies of the Ad Hoc Committee's report, to CRMP Executive Committee and to the members of the Ad Hoc Committee on Statewide Medical Planning.

Proposed Statutory Licensing of "Physicians' Assistants"

- (a) *Report of Committee on Allied Medical Services*: It was VOTED to accept, with commendation, a report on this subject filed by the Ad Hoc Committee. In essence, it was the Committee's recommendation that, whatever measure might be passed, its provisions should extend equal conditions and protection to other types of allied medical personnel who serve as assistants to physicians; i.e., who perform *medical* procedures under the supervision of or at the direction of the licensed Doctor of Medicine. A particular concern of the Committee was that Registered Nurses be included.
- (b) *CSMS Policy re Statutory Provisions for Use of Assistants by Physicians*: Taking into account the report of the Ad Hoc Committee on Allied Medical Services, the statement of purpose of a bill (H.B. 6511) now before the General Assembly, and a proposed approach offered by the AMA, the Council VOTED to endorse the following as an amendment to the Medical Practice Act and/or as a substitute for any bill that proposed to "license" assistants to physicians:

"Nothing in this section shall be construed as prohibiting a licensed physician or surgeon from delegating the performance of certain acts, tasks or functions required for

the care of patients to an assistant whose qualifications to perform such acts, tasks or functions have previously been determined by such physician or surgeon, providing that the acts, tasks or functions are performed under the direction and supervision of such physician or surgeon. The qualification of an assistant to a licensed physician or surgeon to perform such delegated acts, tasks or functions shall be conclusively presumed if the assistant has previously been certified under the provisions of any state law as a paramedical assistant in a field of patient care including the acts, tasks or functions delegated by such physician or surgeon, but this section shall not preclude the delegation of such acts, tasks or functions to uncertified, but otherwise qualified assistants."

It was further VOTED to authorize the Committee on State Legislation to promote the enactment of this amendment to the Medical Practice Act by the 1971 General Assembly.

Other Legislative Matters

- (a) *The Hospital Cost Commission*: It was VOTED to accept the subject report of the CSMS Committee on Hospitals re a series of bills which would restructure the Commission (by adding representatives of the Connecticut Hospital Association, CSMS, labor and the insurance industry) and extend its jurisdiction into the private (as well as the public) sector of hospital and extended-care facilities regarding rates, services, etc. In conjunction with the recommendations of this report, and a commentary on the subject bills by the chairman of the Committee on State Legislation, the Council VOTED to support H.B. 5554 (to add provider and consumer representatives to the Commission) but to oppose the balance of the series of bills (H.B. 5548, 5550 and 5552) on the basis of the following policy statement which it was VOTED to approve:

"The health care provided by private hospitals and related private facilities is not a public utility, and the costs and charges for health care in private hospitals and related private facilities should not be regulated by the State or its agencies. It is proper for the State to regulate costs for health care in facilities operated by the State, or the amount of payment to be made to private hospitals and

related private facilities for services rendered to wards of the State.

"The Connecticut State Medical Society favors programs of study of the costs of hospital care on a regional or even statewide basis and planning in the areas of construction and special services, and believes that there already exists a sufficient number of properly constituted study and planning groups to meet the known needs for same in Connecticut.

"The Connecticut State Medical Society opposes strongly all measures which would place the control of health care in the statutory jurisdiction of an agency or agencies whose administrators are predominantly fiscally oriented and not sufficiently aware of the needs and the personal and professional problems associated with the delivery of health care services."

- (b) *Report of Assembly's "Health Care Study Committee" (Thompson Report)*: The Council was apprised of several of the major recommendations of this Assembly Committee's report, written by Professor John Thompson of the Yale School of Public Health and Epidemiology, and, in particular, of the report's recommendations that studies be made of the billing practices of hospital-based specialists (Anesthesiologists, Radiologists, Pathologists and Physiatrists (not mentioned)), apparently to include salaried Surgeons, Internists, etc., and that analyses be made of the variation in costs of same among the hospitals of the state. It was VOTED to notify the CSMS Sections and allied agencies concerned with the subject of this recommendation.
- (c) *The Tumor Registry*: Having been apprised that the Governor's proposed budget eliminates funds (\$100-120 thousand) needed to reimburse hospitals for the costs of gathering, compiling and reporting cancer patient data to the Registry and that, without such funds, the functioning of the Registry will be impaired, the Council VOTED to communicate to the Governor and the members of the General Assembly the Society's evaluation of the great importance of the work of the Tumor Registry and to urge that sufficient funds be allocated to enable the Registry to continue to operate as effectively in the future as it has in the past.
- (d) *Report-Committee on Public Health*: It was VOTED to accept a report, and approve rec-

ommendations, of the Committee concerning several bills now before the General Assembly, and to refer the report to the Committee on State Legislation for guidance and appropriate implementation. Of special significance was the P.H. Committee's recommendation that CSMS oppose strongly all bills that remove the present requirement that all local health officers, the Commissioner of Health and the Commissioner of Mental Health be Doctors of Medicine.

Report of Committee on Preliminary Study of Nominations

As presented, and with minor amendment, the Council VOTED to approve the report of the Committee and to transmit to the House of Delegates, for action on April 27, 1971, the amended report as the "Report of the Nominating Committee (Council)". Included in the Committee's report, but *not* to be transmitted to the House, were the slates of nominees for Council-appointed and/or elected committees, representatives and advisors. In these instances, approval by the Council constituted election or appointment of the nominees for terms commencing after the 1971 annual meeting of the House of Delegates.

Recommendations—Committee on Public Affairs

Having considered two recommendations made by this Committee, the Council took actions as follows:

- (a) *Audience with Governor Meskill*: It was VOTED to direct the President to select a small group of informed CSMS members and to seek, forthwith, an audience with the Governor for the purpose of allowing the group to discuss with him the Society's advocacy of there being established a "Governor's Health Care Advisory Council" and of the Society's willingness to nominate a list of qualified physicians from which the Governor could appoint the physician members of such Advisory Council. In addition, the group is authorized to discuss with the Governor other matters concerning health and medical care which may be timely and appropriate, it being understood that such discussions would reflect official CSMS policy whenever extant and pertinent. Dr. Granoff selected the group as follows: Morris A. Granoff, New Haven, Chairman; Frederick C. Weber, Jr., Greenwich; David A. Grendon, Sharon; Francis Gallo, Winsted; Sidney L. Cramer, Hartford and William R. Richards, New Haven, ex-officio.

- (b) *Development of Brochure(s) for Distribution to Patients*: It was VOTED to direct the Committee on Public Relations to undertake the development of one or more brochures, for distribution to patients via doctors' offices, which would bring to the attention of patients the significance to them of some of the provisions of various minor and major proposals to restructure the present American system of health care services that are now before the Congress and the Connecticut General Assembly. At such time as the Committee reports to the Council on this assignment, it is understood that estimates of production and distributions costs will be included in such report.

Communication—Chairman, Title XIX Medical Advisory Committee

It was VOTED to accept as information a communication from Charles Polivy, Hartford, Chairman of the Title XIX Medical Advisory Committee, in which Dr. Polivy reported on several informal discussions he has had recently with Mr. Henry White, newly appointed Commissioner of Welfare. In brief, the communication indicated that the Administration is considering a proposal which would reorganize the areas of education, welfare and health (including mental health) and that Commissioner White "saw no reason" why medical assistance and other state-financed health care programs (including Medicaid) could not be placed under the jurisdiction of the health department (a possibility discussed by CSMS representatives with the Assembly's Health Care Study Committee during 1969-70).

Concerning Dr. Polivy's suggestion that the Council "assume a position favoring such a (reorganizational) approach", it was VOTED *not* to assume such a position at this time but to direct the physician group that has an audience with Governor Meskill (see previous item (a)) to pursue the details of the proposed approach that his Administration is reported (by Mr. White) to have under consideration.

Endorsement of Candidate for Joint Commission on Accreditation of Hospitals

On recommendation of several of the Society's AMA Delegates and Alternate Delegates, the Council VOTED to endorse the candidacy of Dr. John B. Butts, Worcester, Mass., for the post of AMA member of the JCAH, and to transmit notice of this endorsement to the Board of Trustees of the

American Medical Association. Dr. Butts has represented the Massachusetts Medical Society in the AMA House of Delegates for a number of years and is said to have great interest in the work of the JCAH.

Report—Ad Hoc: Committee to Study Group Practice

It was VOTED to accept as information a "final" report on this subject submitted by the Ad Hoc Committee which had, as attachments, a previously-submitted preliminary report and a summary of the results of a survey made by the Committee of group practice in Connecticut.

It was further VOTED to approve recommendations of the Ad Hoc Committee as follows:

- (1) That the Ad Hoc Committee on Statewide Medical Planning be asked to consider the necessity and feasibility of conducting, with adequate staff help, cost analyses of the facility of the office of the private practicing physician, whether solo or group, in order to make clear the reasonableness of charges made by the operators of such facility in comparison to the costs and reasonableness of charges made by other facilities for the delivery of health care.
- (2) That the Ad Hoc Committee, having completed its function, be disbanded with gratitude.

Nomination for CSMS "Honorary Degree" in Medicine

It was VOTED to approve the nomination of John Franklin Enders, Ph.D., Sc.D., as a candidate to receive from the Society an honorary degree in medicine. A native of Connecticut, Dr. Enders is presently Director of Research at the Children's Hospital, Boston, Mass. His scientific endeavors have been directed principally to the field of virology and, in 1953, he and two co-workers were awarded the Nobel Prize for their work on poliomyelitis vaccine. The nomination was proposed to the Council by John R. Paul, M.D., of the YUMS Department of History of Science and Medicine. The Council's nomination will be transmitted to the House of Delegates on April 27, 1971, and, if approved by the House, it is planned tentatively to bestow the degree on Dr. Enders at the 1971 semi-annual meeting of the House:

**Resolution re Franklin M. Foote, M.D.,
Commissioner of Health**

It was VOTED to adopt a resolution in recognition of the excellence of the administration given to the affairs of the State Department of Health by Commissioner Franklin M. Foote during the

twelve years he has occupied that post. The text of the resolution follows:

WHEREAS: Franklin M. Foote, M.D., has served with distinction as Commissioner of Health of the State of Connecticut during the past twelve years; and

WHEREAS: His administration of the public health affairs of the State has been characterized by professional expertise, sound judgment and great benefit to the citizenry; and

WHEREAS: It is reported that Dr. Foote is being considered by the Governor for re-appointment to the post of Commissioner of Health; therefore be it

RESOLVED: That the Council of the Connecticut State Medical Society commend Franklin M. Foote, M.D., for the excellence of his administration of the affairs of the State Department of Health during the twelve years he has served as Commissioner; and be it further

RESOLVED: That the Council apprise Governor Thomas J. Meskill of this action and respectfully urge his favorable consideration of Dr. Foote for regular appointment as Commissioner of the State Department of Health.

N.B.: *The foregoing is a summary of the proceedings and action of the Council on February 24, 1971. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by an interested member of the Society.*

Resolution

**Subject: Effect of CRMP "Third Faculty"
Program on Hospital Care Costs**

WHEREAS: The employment of full-time, salaried Chiefs of Services at Community Hospitals is endorsed and promoted by the Connecticut Regional Medical Program as the mechanism for implementing its "Third Faculty" program; and

WHEREAS: The cost of this program will be paid in part or full by the hospital and may well result in an increase in the basic room and board charge (day rate) to the patient, his insurance carrier or the Federal government; therefore be it

RESOLVED: That the Council of the Connecticut State Medical Society again express its concern over the continuing increase in hospital costs; and be it further

RESOLVED: That the Council of the Connecticut State Medical Society express its concern over the further increase in hospital costs that may result from the Third Faculty program sponsored by the Connecticut Regional Medical Program; and be it further

RESOLVED: That the Council of the Connecticut State Medical Society inform the Executive Committee and Advisory Board of CRMP of this concern and urge that they study this effect of the Program before proceeding further to implement it; and be it further

RESOLVED: That copies of this resolution be sent to the Acting Director of Regional Medical Programs Service, the Assistant HEW Secretary for Health Affairs and the Secretary of HEW, the members of Congress from Connecticut, the Presidents and Chiefs of staff of the general hospitals of Connecticut, and be released to the press.

Adopted by the CSMS Council 2/24/71

Resolution

Subject: The "Grand Strategy" of CRMP

Be IT

RESOLVED: That the Council of the Connecticut State Medical Society urge the Connecticut Regional Medical Program to re-examine its "Grand Strategy" with the objective of taking an entirely different point of view toward the delivery of health care which recognizes the primary role played in such delivery by the privately practicing physician in his office or clinic; and be it further

RESOLVED: That the Council urge the Connecticut Regional Medical Program, in conjunction with the newly-formed CSMS Ad Hoc Committee on State-wide Medical Planning, to reassess its current enthusiasm for hospital

and university health center oriented clinics as the most efficient settings for the delivery of health care and to consider making a realistic and unbiased appraisal of the health care delivery potential and efficiency of privately practicing physicians in their offices, whether as individuals, associations or groups.

Adopted by the CSMS Council 2/24/71

Resolution

Subject: The CRMP "Cupiss" Program

Be IT

RESOLVED: That the Council of the Connecticut State Medical Society find that the CUISS Program of the Connecticut Regional Medical Program appears to have been a failure in terms of its own goals and has proven to be of little or no value to patients, hospitals or the medical profession; and be it further

RESOLVED: That the Council express the opinion that these failures of CUISS have been due to unrealistic and misdirected planning and implementation, reflecting the lack of early and meaningful consultation with the practicing physician and his community hospital; and be it further

RESOLVED: That the Council urge the Connecticut Regional Medical Program, in conjunction with the newly-formed CSMS Ad Hoc Committee on State-wide Medical Planning, to reassess the CUISS Program in its entirety with the objective of redesigning its various phases so that it may, in fact, realize its very considerable potential for promoting efficiency in the logistics of hospital management, for assessment of the quality of patient care, for immediate retrieval of individual patient data by attending physicians as an adjunct to instituting prompt and knowledgeable treatment, and, finally, for the accumulation of realistic, valid data for research purposes.

Adopted by the CSMS Council 2/24/71

Placement Wanted

Anesthesiology—34 years of age, Certified, wishes solo, group or institutional type practice in a large or medium size community in Connecticut. Interested in intensive care and teaching. Presently in practice.

Emergency Room—30 years of age, National Boards, wishes a temporary position in Connecticut. Presently in Practice. Available immediately. Contact: Ronald S. David, M.D., USAH, USASA FS, CHITOSE, APO San Francisco 09281.

General Practitioner—33 years of age, American Board Eligible with National Boards wishes solo type practice in a medium size community in Connecticut. Military obligation completed. Contact: Joseph L. Hokik, M.D., 383 Rochester Street, Fall River, Mass. 02720.

Internal Medicine—Nephrology—30 years of age, American Board Eligible wishes group, associate or institutional type practice in a large or medium size community in Connecticut. Contact: Maher A. A. Azer, M.D., Holiday Garden Apts., Iowa City, Iowa 52240.

Internal Medicine—Pulmonary—32 years of age, National Boards, wishes group or institutional type practice in a large or medium size community in Connecticut. Presently in practice. Contact: Stephen R. Fish, M.D., 19 Rockaway Lane, Arlington, Massachusetts 02174.

Internal Medicine—32 years of age, Certified with National Boards wishes group or associate type practice in Connecticut. Interested in group practice and possibly teaching on house staff level. Military obligation will be completed in July. Contact: Sanders T. Frank, M.D., 48 TAC Hospital, APO New York 09179.

Internal Medicine—Gastroenterology—31 years of age, American Board Eligible with National Boards wishes solo, group, associate, institutional or industrial type practice in a large or medium size community in Connecticut. Connecticut license. Military obligation completed. Contact: Arnold L. Klipstein, M.D., 113 Florence Road, Branford, Connecticut 06405.

Internal Medicine—Hematology—34 years of age, Eligible with National Boards wishes group or associate type practice in a medium size community in Connecticut. Presently in practice. Military obligation completed.

Internal Medicine—33 years of age, Certified with National Boards wishes solo, group or associate type practice in a large community in Connecticut. Prefer to be with hospital with full house staff. Military obligation completed. Contact: William E. Miller, M.D., 115 Niuike Cr., Honolulu, Hawaii 96821.

Obstetrics & Gynecology—28 years of age, National Boards, American Board Eligible, wishes solo, group or associate type practice in a large or medium size community in Connecticut.

Obstetrics & Gynecology—30 years of age, National Boards, American Board Eligible, wishes solo or group type practice in Connecticut. Contact: Frederick S. Feiner, M.D., 3218 Deerfield Road, Laurel, Maryland 20810.

Ophthalmologist—35 years of age, military duty completed, interested in the following opportunities: In Connecticut coastal area: Available space in large medical building, or

association/partnership with established ophthalmologist, or purchase of ophthalmology practice from retiring or infirmed practitioner. Must return to east coast due to family reasons, from San Diego where presently in practice. Would consider Locum Tenens.

Ophthalmology—33 years of age, Eligible with National Boards, wishes solo type practice in a medium size community in Connecticut. Connecticut license. Military obligation completed. Available immediately.

Ophthalmology—30 years of age, National Boards, American Board Eligible, wishes associate, solo or group type practice in a medium, large or small size community in Connecticut. Contact: John P. Tortorella, M.D., 7 East 14 Street, New York, New York 10003.

Orthopedics—32 years of age, with National Boards, wishes group (specialty group) type practice in a medium size community in Connecticut. Military obligation completed. Contact: Charles F. Mess, M.D., 3821 3rd Street, N.W., Rochester, Minn. 55901.

Orthopedics—32 years of age, National Boards, American Board Eligible, wishes solo, group or associate type practice in a medium size community in Connecticut. Contact: Anthony A. Rizzo, M.D., 3341 Peter Lane, Yorktown Heights, New York 10598.

Pediatrician—32 years of age, with National Boards, wishes group or institutional type practice in Connecticut. Military obligation completed. Contact: Richard M. Goldstein, M.D., 2509 Pine Street, Philadelphia, Pa. 19103.

Surgery—31 years of age, National Boards, American Board Certified, wishes group or associate type practice in a large or medium size community in Connecticut. Connecticut license. Contact: Girard A. Chapnick, M.D., 1023 B Drennan Park, Fort Campbell, Kentucky 42223.

General Surgery—31 years of age, Certified with National Boards, wishes group or associate type practice in Connecticut. Contact: Raymond F. Crystal, M.D., 1021-A Drennan Park, Fort Campbell, Kentucky 42223.

General Surgery—32 years of age, Certified, wishes solo, group, associate or institutional type practice in Connecticut. Presently in practice. Contact: Candido E. DeBorja, Jr., M.D., 280 River Road, Apt. 4-B, Piscataway, New Jersey 08854.

General Surgery—Thoracic—31 years of age, Certified, wishes group or institutional type practice in a medium size community in Connecticut. Contact: Antonio T. Donato, M.D., 79 Southbourne Road, Jamaica Plain, Mass. 02130.

General Surgery—32 years of age, Certified with National Boards, wishes solo, group or associate type practice in a medium size community in Connecticut. Desires a college or university city or town in which to practice. Presently in practice. Available immediately. Contact: Peter A. Gentling, M.D., 1542 Lombard Street, San Francisco, California 94123.

General Surgery—35 years of age, National Boards, wishes group or associate type practice in a medium or small size community in Connecticut. Military obligation completed. Contact: Martien Mulder, M.D., 43 Walnut Street, Coopers-town, New York 13326.

General & Thoracic Surgery—32 years of age, National Boards, American Board Eligible, wishes group or institutional type practice in Connecticut. Prefer hospital with medical school affiliation and with residency training program in surgery. Contact: Joseph B. Twichell, M.D., 435 East 70th Street, New York, New York 10021.

Urology—33 years of age, National Boards, wishes associate type practice in a large size community in Connecticut. Military obligation completed. Contact: Melvin A. Mackler, M.D., 9306 Newhall Road, Richmond, Virginia 23229.

Placement Opportunities

Director of Clinical Laboratories needed immediately in 1400 bed State-owned institution for mentally ill. Duties include clinical and anatomical pathology with some teaching and research activities, if desired. Modern facilities, excellent fringe benefits, competitive salary. Write Superintendent, Norwich Hospital, Norwich, Connecticut 06360.

General Practitioner or Internist for incorporated medical group in Meriden, Connecticut. Population of 55,000. Guaranteed salary plus bonuses based on performance. Early partnership with fringe benefits, including pension plan. Write or call the Colony Medical Group, Inc., 377 Broad Street, Meriden, Connecticut. Phone (203) 237-7411.

Pediatrician—Board certified or eligible. Busy practice requires associate—salary first year, then partnership. Excellent location and schools—between New Haven and New York. City facilitates hospital appointments.

Pediatricians—At least 2 Pediatricians are needed for private practice to serve a growing community of over 50,000. Area consists of several towns with 3,000 to 14,000 population each. Good country living with easy access to major cities via well developed highway system. Contact: Edmond B. Reheb, M.D., 14 Carter Street, Danielson, Connecticut 06239. Telephone: 203-774-5151.

Pediatrician—Two Pediatricians in Stamford, Connecticut desire a third partner for active practice. Excellent salary leading to partnership. Contact: Ralph Tella, M.D., or Michael Suchenski, M.D., 107 Glenbrook Road, Stamford, Connecticut. Phone. (203) 324-3440.

Physicians needed in the following specialties: Anesthesiology, Internal Medicine, General Medicine, Psychiatry, Otorhinolaryngology, Neurology, Obstetrics and Gynecology to practice in Torrington, Connecticut and surrounding communities. Modern 191 bed general, short term, voluntary hospital in Northwestern Connecticut, with all major medical and surgical specialties represented, serves a population of 50,000. Search Committee of the Medical Staff will assist qualified candidates. Write or call: Thomas H. Walker, M.D., Chairman of Search Committee, The Charlotte Hungerford Hospital, Torrington, Connecticut 06790, Phone: 203-489-0441.

Physicians—General Practitioner needed. 8 room house with fully equipped office available; no X-ray equipment. Connecticut shoreline community.

Staff Psychiatrist—New Britain (Central Connecticut). Part-time, 20 hours. Progressive mental health clinic, connected with Regional Mental Health Center. 400 bed general hospital psychiatric in-patient unit and affiliated with UConn Medical School. Opportunity for private practice in the community. Write: Medical Director, Mental Health Clinic, New Britain General Hospital, 100 Grand Street, New Britain, Connecticut 06050.

Psychiatrist—Board certified or eligible, to direct Mental Health Clinic in general hospital, half time, \$15,000 to \$25,000 depending on qualifications, opportunity for private

practice, prefer with clinic experience and interest in development of comprehensive community services; attractive living in semirural community with University, near urban centers; send curriculum vitae with inquiry to Richard B. Ogren, Administrator, Windham Community Memorial Hospital, Willimantic, Connecticut.

Radiology—For sale. Physician retiring. Well established office. Diagnostic Roentgenology. Excellent opportunity for young radiologist. Hospital appointments available. Call New Britain (203) 223-4828.

ANYONE INTERESTED IN THE ABOVE IS ASKED TO CONTACT THE PHYSICIANS PLACEMENT SERVICE, 160 ST. RONAN STREET, NEW HAVEN, CONNECTICUT 06511.

AROUND THE STATE

Board of Governors
New Haven County Medical Association
February 25, 1971

The Board of Governors of the New Haven County Medical Association met on Thursday, February 25, 1971 at Rapp's Paradise Inn in Ansonia, Conn., the latter being centrally located in the county. Stewart J. Petrie, M.D., presided.

Reports were heard from the numerous committees which had held recent meetings and from the various officers.

Plans were made for attendance at the Annual Meeting of the Connecticut State Medical Society House of Delegates on April 27, 1971.

The Board voted by majority vote that it felt the benefits of compulsory attendance with minimal penalties outweighed the disadvantages, and voted its support for compulsory attendance similar to that in effect in Fairfield and Hartford Counties.

The Board voted its reaffirmation of its 1968 position that the fees charged by physicians in New Haven County should be reasonable and prevailing fees.

The Board voted to endorse the preliminary request for a \$200,000. federal government "Health Planning Grant" submitted by "the Neighborhood Corporations" of the inner City of New Haven. The Board further pledge its aid and cooperation in that endeavor.

The Annual Meeting of the Association will be on March 25, 1971 and the next Board of Governors meeting will be on April 15, 1971.

Respectfully submitted,
William L. West, M.D., Clerk

Controlled Clinical Trials and the Tolbutamide Controversy

Paul H. Lavietes, M.D.

The UGDP study was designed to test the effect of blood sugar level on the development or progression of vascular complications in patients with recently diagnosed maturity onset diabetes. Insulin and tolbutamide were used as hypoglycemic agents. An unexpected finding was a very significant increase in cardiovascular deaths in the patients taking tolbutamide as compared with those taking the inert placebo. This naturally gave rise to great concern in the members of the study group and its funding agency in the N.I.H. When the evidence was judged to be incontrovertible, tolbutamide was removed from the study, two years before the contemplated ten year term, in fairness to the patients at risk.

The significance of the observation of increased cardiovascular mortality from tolbutamide was confirmed by independent review by the F.D.A., A.D.A., the A.M.A. Council on Drugs and the Medical Letter. For an excellent critique of the study see the introduction by Dr. Henry T. Ricketts to the published study (*Diabetes* 19: Supplement 2, 1970). The necessity of prolonged double blind controls for evaluation of drugs used over long periods in chronic disease is well recognized. Too few such studies are available. Why then has the result of this study led to acrimonious attack rather than appropriate response by distinguished members of the medical profession?

First there are those clinicians who insist that their large experience with the use of tolbutamide in diabetics fails to indicate that it increases cardiovascular mortality. They do not understand the nature of controlled clinical trials. Experience in treating thousands of patients can not establish whether or not tolbutamide influences cardiovascular mortality unless a well-defined patient population is randomly distributed to drug and placebo groups, observations are made in an ap-

propriate double-blind manner and statistical expertise is involved in the planning, conduct, and evaluation of the study. Criticism of the UGDP study based on uncontrolled observations can not merit serious consideration, however prominent, experienced or sincere the observer may be.

Next are those who understand or profess to understand the importance of clinical trials but criticize various aspects of the UGDP study in particular. It must be realized that doubts plagued the UGDP investigators, its funding agency (the N.I.H.) and the F.D.A. but that intensive appraisal with the aid of some of the country's most outstanding statisticians and clinicians has supported the validity of the study. Further independent reviews by the A.D.A., the Council on Drugs of the A.M.A. and the Medical Letter, utilizing expert clinicians and statisticians unassociated with the UGDP study have all upheld the study. In view of this, little credence can be given to the vague undocumented criticism so vehemently directed at the design of the study.

Many of those who reject the conclusions of the study and the recommendations of the FDA do so because they shake the foundations of their faith that control of the blood sugar slows or prevents the development of the dreaded accompaniments of the disease. Others, who promote early detection and control of hyperglycemia with the aid of oral hypoglycemic agents to prevent morbidity and mortality from diabetes, are understandably reluctant to accept the UGDP study results. Dr. Ricketts points out that "the real lesson of the data is that if diet plus insulin does not reduce mortality experienced below that with diet alone, it is highly improbable that oral hypoglycemic agents will do so."

Among the commonly expressed objections to the UGDP study are contrary findings in a British and a Scandinavian study, the use of a fixed dose of tolbutamide rather than one adjusted to the needs of the individual patient, and a patient popula-

DR. PAUL H. LAVIETES, associate clinical professor of medicine and of public health, Yale University School of Medicine.

tion in the study which is not representative of those who would be treated by tolbutamide. Reference to these foreign studies shows that they both use fixed dosage of tolbutamide and both exclude from the study patients with frank diabetes. The British study admitted only subjects found to have capillary blood sugar of 120 to 200 mg. per cent two hours after a 50 Gm. oral glucose load in a detection study. These were mild or borderline diabetics, less representative of the general population treated with tolbutamide than those of the UGDP study. The study demonstrated no significant differences in mortality between the tolbutamide and placebo groups.

The Scandinavian study admitted any patient who survived by one month a first myocardial infarct, excluding any with overt diabetes or fasting blood sugar greater than 110 mg. per cent on more than one occasion or a history of treatment for diabetes. One would expect higher cardiovascular mortality in such a group than in the UGDP study group selected solely because of recently diagnosed diabetes. One would also expect the highest mortality in the first year of follow-up and the greatest variability in mortality between groups so selected also in the first year. It is only during the first six months of this study that tolbutamide seems to improve survival, the reverse being true in the subsequent three years. Only 38 patients were followed for longer than three years on tolbutamide and only 18 for longer than four years. It should be noted that the increased mortality in the UGDP tolbu-

tamide group first became apparent only in the fourth year of the study and that there were 184 patients followed on tolbutamide for more than four years in the UGDP study.

The physician must protect his patient's welfare against the interests of the drug company when these do not coincide. He must resist efforts to induce him to prescribe unnecessary drugs or overuse good ones. He must be thankful for the efforts of the FDA in behalf of his patients and welcome and encourage controlled trials of drugs which he is in no position to evaluate in his own practice. The position of the FDA on tolbutamide is, after all, no stronger than that of the ADA or the AMA. If it carries more weight in practice, for whatever reasons, this is not the fault of the FDA. We must recall that detail men were extolling the virtues of MER-29 the day before the drug was removed from the market under pressure from the FDA, and many months after its propensity to produce cataracts was known to the manufacturer and that the stubborn resistance of an overworked mercilessly pressured physician in the FDA to whom we must be eternally grateful saved us from prescribing thalidomide.

The FDA must be supported and strengthened, not emasculated, if the interests of our patients are to be protected against the conflicting interests of the companies. Furthermore, funds must be available for controlled studies on many drugs which we use freely over long periods, and competent dedicated manpower must be encouraged to undertake such studies.

Tolbutamide: Another View

Louis H. Nahum, M.D.

Tolbutamide came into general use in the treatment of diabetes mellitus in 1956. It has achieved a reputation for being an exceptionally safe drug. It has been prescribed on a vast scale and it is often preferred to other sulphonurea drugs because in the standard dosage it seldom causes hypoglycemia. The sudden warning from the FDA about the possible dangers of oral antidiabetic agents was received with a sense of shock. The FDA recommendation is that these drugs should be prescribed only when diet or diet with insulin has been judged to be ineffective. The Council on Drugs of the AMA has supported this recommenda-

tion and an ad-hoc committee of the American Diabetic Association¹ has done so in guarded terms.

This all came from a report of the University Group Diabetic Program, a cooperative study of twelve university centers with established diabetic clinics. Their objectives were to evaluate the efficacy of hypoglycemic treatments in the prevention of vascular complications in a long-term prospective trial, to study the natural history of vascular disease in maturity onset non-insulin dependent diabetic patients and to develop methods applicable to cooperative clinical trials. More than 800 recently diagnosed diabetic patients were recruited

over a period of 5 years and in just over half of them the fasting blood glucose levels was less than 130.

The patients were assigned at random to 4 treatment groups: (1) diet and placebo, (2) diet and tolbutamide (1.5 grams daily) (3) diet and fixed insulin dose (10-16 units of units depending on body surface area) (4) diet and variable insulin dose sufficient to control the blood sugar level. The follow up period exceeded 8 years in a few and 5 years in over three quarters of the patients. The results were subjected to highly sophisticated statistical techniques.

Two major conclusions emerged. One was that there was no evidence that the combination of diet and tolbutamide was more effective than diet alone in prolonging the life of the patient with mild diabetes. The second conclusion was that the death rate from cardiovascular disease was significantly greater in the tolbutamide treated group than in the placebo group. The actual number of deaths with percentages were: placebo 10 (4.9 percent), tolbutamide 26 (2.7), fixed insulin dose 13 (6.2), variable insulin dose 12 (5.9). Thus the results of the last two groups were not significantly different from each other or from those of the placebo group! It would seem then that the nature and amount of insulin used led to no improvement of outcome over cases living on diet alone. This astonishing fact of the study was not emphasized either by the authors of the study nor by the FDA advice. Nevertheless the statistical methods have satisfied critics both in America and Britain, so any doubts about the meaning of these results must relate to the layout of the study in particular the randomization process. An examination of the details does not reveal any apparent defect but a number of curious features do emerge.

In the first place only 54 percent of the patients were white, so that the sample was by no means representative of the total population in this country. Another curious feature was that the diagnosis of diabetes was discarded in no less than 69 of the patients after the initial glucose tolerance test was carried out, nevertheless, all except 21 were later recorded as abnormal and their results were included in the final analysis. One of the criteria for entry to the study was freedom from life-endangering disease and a minimum life expectancy of 5 years, yet 21.5 percent had a history of digitalis use, angina pectoris or a significant electrocardiographic abnormality. Then there were retinal exudates in 48 percent of patients with initial photography and other abnormalities in 15.1 percent.

An examination of the compositions of the tolbutamide group shows that it began with a slightly higher percentage of several unfavorable features such as age, digitalis use, high fasting blood sugar

levels and arterial calcification than any of the other treatment groups. When the tolbutamide was compared with the placebo group seven such characteristics were similarly commoner. Individually none of these differences is statistically significant and the possibility that they might have a cumulative effect on the mortality figures cannot be answered in a satisfactory way. The statistical methods used in this study do not support such an idea, but as the Committee of the American Diabetes Association points out statistics is a science of probabilities not of certainties.

It might be thought that the number of cardiovascular deaths is as yet too small to permit any conclusion. However, the authors of the report were so impressed that they discontinued the use of tolbutamide in 1969. The AMA Council on Drugs believes that all sulphonureas should be regarded as similar to tolbutamide and that the biguanides although structurally different may have the same association with an increased cardiovascular mortality.

How could a sulphonurea drug damage the cardiovascular system. One mechanism, myocarditis and microgranuloma in 29 necropsied patients treated with tolbutamide has not been confirmed.¹ It is hard to think of any other mechanism. On the contrary, many workers have been attracted by the possibility that sulphonureas might restore the efficiency of insulin production of mild diabetes and perhaps mitigate the vascular disease with which it is believed to be associated. In fact, Keen and Jarret³ have produced evidence that tolbutamide used in this way may be helpful.

The recommendation that oral antidiabetic drugs should be used only as a last resort will be received with dismay by those who have been impressed by their ease of administration, freedom from side effects and continual efficacy for as long as 15 years. Moreover, the dangers of insulin even in small doses are not negligible and hypoglycemia can be a serious risk in the elderly and infirm. Further, the use of insulin if we accept this study does not confer any special advantage over the placebo group.

What then should the decision be. At present until much more evidence is made available, it does not seem right to abandon this group of well-tried drugs. This is the position which the Committee on Safety of Drugs in Britain has taken stating that at present it sees no need to change its attitude on tolbutamide and related drugs.

References

- Lancet 1, 171, January 23, 1971. The Tolbutamide Evidence.
- Diabetes 1970 Suppl. 2 p VIII.
- Ibid p VI; Ibid p III; Ibid p 474.
- Keen, H. Jarret, R. J., In Atherosclerosis: Proceedings of the Secaid Symposium (Edited by R. J. Jones) p 435, New York 1970.

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Correctable Complications of Neoplastic Disease

I. Hypercalcemia

Ronald C. DeConti, M.D.

Physician awareness of the possible development of hypercalcemia may do much to contribute to the well being and survival of patients with neoplasms of diverse primary sites. While the differential diagnosis of hypercalcemia may be a major clinical problem, hypercalcemia more often appears insidiously in patients already known to have neoplastic disease. The physician may be inadvertently lulled into believing that the constellation of symptoms such patients may present, represents the inevitable and relentless progression of a neoplasm itself rather than a condition usually amenable to therapy. Hypercalcemia may mimic advancing disease as the patient describes increasing fatigue, malaise, weakness, polyuria, anorexia, nausea, vomiting, constipation, and abdominal pain, is gradually noted to develop mental confusion and disorientation and progresses to stupor, coma and death. This pattern may present insidiously or acutely and probably depends on the rate of rise in serum calcium. Only rarely will the patient display all the possible manifestations. Predominant gastrointestinal symptoms may suggest obstruction while the neurological effects may simulate brain metastasis.

Neoplastic disease is the most common overall cause of hypercalcemia. Most frequently, this is related to dissolution of bone in patients with widespread bone involvement. Carcinoma of the breast and multiple myeloma are the most frequent offenders. Hypercalcemia due to tumors without bone metastasis has been called pseudohyperparathyroidism because of the similarity of clinical and laboratory features with primary hyperparathyroidism (this disorder probably exceeds primary hyperparathyroidism in frequency). Radioimmunoassay for parathyroid hormone has been positive in some of these patients. Hypernephroma and bronchogenic carcinoma account for the majority of these nonendocrine secreting tumors but a wide

variety of epidermoid carcinoma (head and neck, bladder, renal pelvis, penis, vulva) as well as some of mesodermal origin (ovary, endometrium, liver) have been implicated. Other suggested mechanisms by which neoplasms produce hypercalcemia await supporting clinical evidence.

The principles of therapy of hypercalcemia consist of: treatment of the specific cause, decreasing the calcium ingestion or absorption, increasing calcium deposition into bone and or soft tissues, increasing the urinary excretion of calcium, and reducing the ionized plasma calcium. Any estrogen therapy should be discontinued as these agents may precipitate hypercalcemia. When a tumor is localized the modalities of surgery or X-ray therapy are usually preferred to chemotherapy. Alkylating agents, antimetabolites, antineoplastic antibiotics and adrenocortical steroids are of benefit in patients with generalized disease as a result of their tumorcidal effects. The specific choice of agent would be guided by the tumor type and previous history of response. Dietary restrictions and oral phosphate therapy will reduce the absorption of calcium. Intravenous phosphate therapy and mithramycin may lower serum calcium by increasing bone and soft tissue deposition of calcium. The major mainstays of therapy, and the initial treatments in most instances are measures designed to increase the excretion of calcium utilizing hydration, saline diuresis, non-thiazide diuretics, and more rarely, intravenous infusions of sodium sulfate. Because of its potential complications, the chelating agent EDTA has been employed only in dire circumstances.

The following case demonstrates a not unusual presentation of hypercalcemia and response to therapy.

Case Report

EM (63-99-26) a 69 year old draftsman entered the Yale-New Haven Hospital on 8/28/70, complaining of sore throat and difficulty swallowing of seven weeks duration. Questioning revealed a 40 lb. weight loss during the last six months and a long history of alcohol and tobacco usage. He appeared chronically ill, somewhat emaciated, was well oriented

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Supported in part by Grants CA 08341 and CA 1538 from the U.S. Public Health Service.

with left-sided drooling from the mouth. Oral examination revealed a large left tonsillar mass extending to the alveolar ridge, floor of the mouth and to the tongue. Bone films disclosed erosion at the angle of the mandible. Biopsy revealed epidemoid carcinoma; he was considered Stage IV by the TNM system and sequential therapy with methotrexate and irradiation was planned. During the first week of hospitalization, his fluid intake was noted to be inadequate, his condition deteriorated with increasing lethargy and confusion so that on 9/7/70, he was somnambulant and disoriented. That day, blood chemistries revealed; serum calcium 12.4 mg%; serum phosphorus 1.9 mg%; total protein 5.4 mg%/l with 2.7 mg% albumin; alkaline phosphatase 36 international units/l; serum creatinine 1.1 mg%; serum sodium 134 mEq/l; serum chloride 93 mEq/l; serum bicarbonate 28.5 mg/l and serum potassium 4.1 mg/l. The specific gravity of the urine was 1.006. Lumbar puncture disclosed no abnormality. Intravenous fluid therapy was begun with normal saline to improve hydration and promote a saline diuresis and antineoplastic therapy with methotrexate was initiated. Within 48 hours serum calcium fell to 10.7 mg%, cerebra- tion returned to normal and he improved steadily. The serum calcium was maintained between 8.6-7.7 mg% during the next 2 weeks. Intermittant chemotherapy with methotrexate reduced the tumor mass, adequate oral intake was re-established, and intravenous fluids were discontinued. X-ray therapy was initiated and he was discharged 10/6/70 to continue treatment on an out-patient basis.

Comment

Despite the erosion of the mandible, the presence of hypophosphatemia and the low serum chloride suggested pseudohyperparathyroidism as the cause of this patient's hypercalcemia. Radioimmunoassay

studies were not performed. The low serum protein undoubtedly contributed to the severity of the symptoms at only modestly elevated serum levels and dehydration was probably the precipitating factor. He responded well to diuresis and had no recurrence as his primary therapy proceeded uneventfully.

CLINICAL MANIFESTATION OF HYPERCALCEMIA

Gastrointestinal
Anorexia, nausea, vomiting
Constipation, abdominal pain
Neurological
Lethargy, apathy, confusion, psychosis, coma
Muscle weakness, depressed reflexes
Renal
Polyuria, polydipsia
Albuminuria, hyposthenuria, azotemia
Cardiac
Rate and rhythm disturbances and failure
Shortened QT intervals, T wave and P wave flattening and inversion

References

Amatruda, T. T., Jr., Nonendocrine secreting tumors, Chapter 25 in Duncan's Diseases of Metabolism, 6th Edition 1969, W. B. Saunders Company.

Lafferty, F. W. Pseudohyperparathyroidism, Medicine 45: 247-260, 1966.

The Priceless Ingredient

In the City of Bagdad lived Hakeem, the Wise One, and many people went to him for counsel which he gave freely to all, asking nothing in return. There came to him a young man who had spent much but got little, and said, "Tell me, Wise One, what shall I do to receive the most for that which I spend?" Hakeem answered, "A thing that is bought or sold has no value unless it contains that which cannot be bought or sold. Look for the Priceless Ingredient." "But, what is this Priceless Ingredient?" asked the young man. Spoke then the Wise One: "My son, the Priceless Ingredient of every product in the marketplace is the Honor and Integrity of him who makes it. Consider his name before you buy."

Electrocardiogram of the Month:

Yale-New Haven Hospital
New Haven, Connecticut

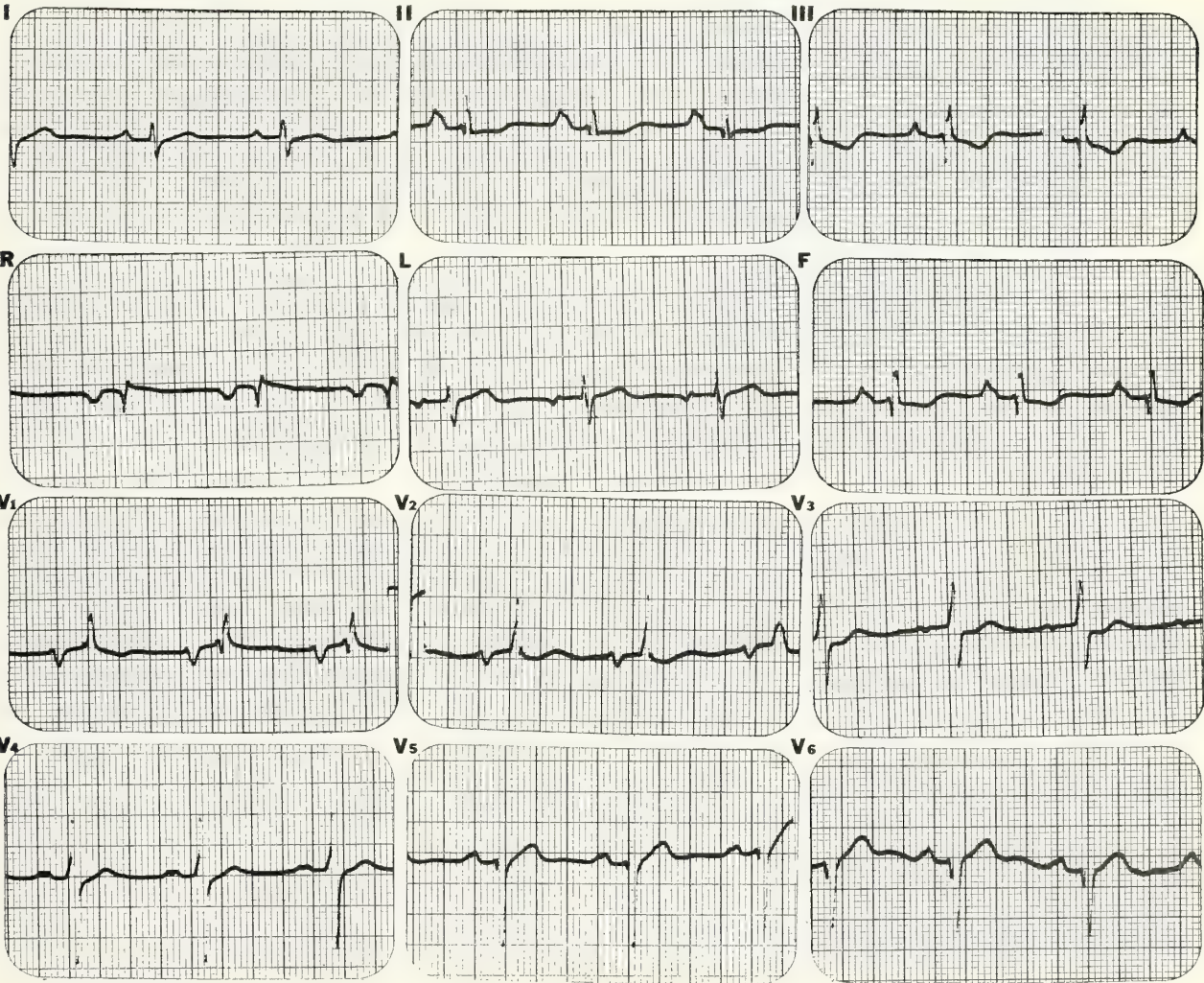
Prepared by
HYMAN M. CHERNOFF, M.D.
Associate Professor of Clinical Medicine,
Yale School of Medicine
Director, Dept. of Electrocardiography
Memorial Unit, Yale-New Haven Hospital

The tracing shown below was obtained from a female patient, age 39 who presented in acute congestive failure. Which of the following valvular lesions or congenital heart defects was most likely present?

- a—I-V septal defect
- b—Mitral Insufficiency
- c—Tricuspid Stenosis
- d—Aortic Stenosis
- e—Mitral Stenosis
- f—Pulmonic stenosis

The tracing is that of a patient with rheumatic heart disease with severe mitral stenosis. The large bifid P-waves in leads 2, 3, aVF, V4, V5 and V6 and

the prolonged negative phase of the biphasic P-waves in leads V1 and V2 are characteristic findings in the presence of left atrial hypertrophy. The QRS abnormalities are consistent with incomplete right bundle branch block and associated right ventricular hypertrophy, findings commonly seen in patients with pulmonary hypertension secondary to severe mitral stenosis. The combined finding of left atrial hypertrophy and right ventricular hypertrophy is not characteristic of any other of the heart lesions mentioned above.



OBITUARIES

Carl Edward Johnson, M.D.

1898-1970

Dr. Carl Johnson died on November 23, 1970 after a long illness. He was 72 years old.

He was born in Denver, Colorado on June 20, 1898 and his family moved to California where he was raised. He graduated from high school at the age of seventeen and attended college at Leland



Stanford University, receiving his bachelor of arts degree in 1922. At the age of twenty-two he entered the Harvard Medical School, where he received his M.D. degree in 1926. He spent two more years at Harvard as a fellow in comparative anatomy and then as an instructor in histology and embryology.

In 1926, Dr. Johnson moved to New Haven where he was to remain the rest of his life. He started as an intern in surgery, gynecology and obstetrics at the New Haven Hospital and rose to the position of resident in surgery and the following year to resident in obstetrics and gynecology, thus achieving a record of sorts, having been through the senior residency on two services. He then spent a year in Hamburg, Germany as a national research counsel fellow in physiology.

In 1932, he entered the private practice of obstetrics and gynecology in New Haven. For over thirty years he had a large, active practice and was Attending Obstetrician and Gynecologist at Yale-New Haven and of the Hospital of St. Raphael. Dr. Johnson was also a consulting obstetrician and gynecologist at the Milford and Griffin Hospitals. For many years he was chief of obstetrics and gynecology at the Hospital of St. Raphael. He was also active on the clinical faculty of the Yale University School of Medicine as an associate clinical professor. He served as chief of the Women's Clinic for a time.

Dr. Johnson was a Fellow of the American College of Surgeons and of the American College of Obstetricians and Gynecologists, a diplomate of the American Board of Obstetrics and Gynecology, a consultant to the Surgeon-General of the U.S. Army, Treasurer of the American Society for the Study of Sterility, and the author of several medical and scientific publications.

In addition, Dr. Johnson was a member of the National Research Council Fellowship, the New Haven Medical Association and the New Haven County Medical Association, the Connecticut State Medical Society, the American Medical Association, the New England Obstetrical and Gynecological Society, the U.S. Public Health Service from 1942 to 1947, and the Connecticut State Medical Examining Board from 1948 to 1960.

A skillful surgeon, and an extremely and meticulously competent clinician, he is missed by his patients and his colleagues. For years he gave unstintingly of his time and effort, not only to his patients but also to the hospitals he served so long and so well. His many acts of kindness to patients and fellow doctors will always be remembered by those who had the privilege of knowing him and working with him.

Dr. Johnson leaves his wife, Ann G., and two sons, Carl E. Johnson, Jr. and William S. Johnson.

Charles B. Cheney, M.D.

Ralph W. Nichols, M.D.
1887-1971

Dr. Ralph W. Nichols, a surgeon in the New Haven area for more than 50 years died suddenly February 5, 1971 after being stricken at his home 62 West Rock Avenue. He was 83.



Doctor Nichols, husband of the late Florence Rowe Nichols, was born in New Haven, September 3, 1887, the son of the late Burt and Ellen Hough Nichols. He attended local schools graduating from New Haven High School in 1905.

He graduated from Yale University with the class of 1908 and received his M.D. from Johns Hopkins in 1912. He served his internship in Boston and New Haven Hospitals.

From 1913 to 1919 he was in general practice in North Haven and served in the Medical Corps of the U.S. Army during World War I. Dr. Nichols was a fellow in surgery at the Mayo Clinic from 1919 until 1923.

Following this he resumed practice of surgery in New Haven and was attending surgeon at Grace Hospital and then Yale-New Haven Hospital until his retirement a few years ago.

Dr. Nichols was a member of the New Haven Medical Association and was its president in 1955. He was president of the New Haven County Medical Association in 1945. He was also a 50 year member of the Connecticut and American Medical Associations. Dr. Nichols was also a fellow in the American College of Surgeons.

Other memberships include the New Haven Kiwanis Club, of which he was President in 1940; the New Haven Country Club, the Connecticut Junior-Senior Golf Association; the Connecticut

State Senior Golf Association and the United States Senior Golf Association.

Dr. Nichols was the holder of many golf titles, both in the Connecticut area and Minnesota while serving at the Mayo Clinic. He organized the New Haven Medical Association Golf Association and was its president in 1958.

Survivors include two daughters; Mrs. Winifred N. Lincoln of Fort Lauderdale, Florida; Miss Helen E. Judson of New Haven, and one son, William B. Nichols of Kennett Square, Pa. He also leaves five grandchildren.

Dr. Nichols was a warm personality. He was never in too much of a hurry to explain in the operating room and at the bedside the reasons for the procedures which he contemplated. He was always open to the suggestions of others including his house staff. His technique was the best possible one for his day and age. No one commanded greater respect for his personal and surgical ability. He trained and inspired many young men, all of whom remained his friends throughout his life.

Though we all regret losing him, his manner of death was exactly what he wished for, an exit from life while he was doing something which he loved. Like many others, he wished for himself no long period of disability. He is mourned by everyone who had the privilege of knowing and working with him.

Theodore S. Evans, M.D.

In Memoriam

Caldwell, David, McGill University, 1919. Dr. Caldwell was a general surgeon and gynecologist in the Manchester area since 1925. He was chief surgeon and head of gynecology at Manchester Memorial Hospital until 1961. After that the hospital appointed him to the post of senior surgeon and senior gynecologist. Dr. Caldwell was a fellow of the American College of Surgeons and a member of the Hartford County Medical Association, the Connecticut State Medical Society, and the American Medical Association. He died February 14, 1971, at the age of 75.

Chadwick, John Bancroft, University of Rochester, 1950. Dr. Chadwick was a pathologist in the Middletown area since 1953, and director of the laboratory at Norwich Hospital. He was a member of the New London County Medical Association, the

Connecticut State Medical Society, and the American Medical Association. He died February 28, 1971, at the age of 49.

Mouradian, Mary G., Woman's Medical College, 1913. Dr. Mouradian was a practicing physician and surgeon in the New Britain area since 1913. She was a member of the Hartford County Medical Association, the Connecticut State Medical Society, and the American Medical Association. She died February 25, 1971, at the age of 83.

Pierson, Emily, Yale, New Haven, 1924. Dr. Pierson was a general practitioner in the Cromwell area since 1924, and was a member of the Middlesex County Medical Association. She died January 22, 1971, at the age of 83.

Ruud, Norman R., Yale, 1938. Dr. Ruud practiced internal medicine in the Hartford area since 1957, and was a consulting physician at Hartford Hospital. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society, and the American Medical Association. He died January 28, 1971, at the age of 64.

Whittles, Lee Jay, College of Physicians & Surgeons, Columbia University, 1921. Dr. Whittles was a practicing physician in the Hartford area since 1921, and a former medical examiner of Glastonbury for 25 years. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society, and the American Medical Association. Dr. Whittles died February 20, 1971, at the age of 73.

Norepinephrine Metabolism in Brainstem Of Spontaneously Hypertensive Rats

(*Science* 170, 544, October 30, 1970) Concentrations of norepinephrine in lower brainstem and hypothalamus of genetically hypertensive rats are significantly lower than in control rats. It suggests that possibly in man also genetic hypertension may be related to a deficiency of catecholamine in certain areas of the brain.

L. Dopa which is a precursor of catecholamine should result in reduction in blood pressure. Initial experiments do show this to be true.—L.H.N.

Science News

Levodopa Gets Green And Yellow Light For Clinical Use

(*JAMA*: 212, 2031, June 22, 1970). Physicians have been advised to "go slowly" in building up the dosage of levodopa, now that they can prescribe it for patients with Parkinson's disease. Practically all patients have some side-effects from the drug but these can be lessened if the drug is given gradually.

The usual daily dosage of levodopa is from 4-6 grams administered orally in 3 or more doses with food. "We don't know how these patients will react after 5, 10 or 15 years of treatment." Because of our limited knowledge of the drug's long-term toxicity it is conceivable that it could reverse the benefit-to-risk ratio, said Dr. Charles Edwards head of FDA.

Perhaps a million Americans are afflicted with Parkinson's disease but only about two-thirds of these can benefit from the drug. Whether the use of the drug is justified in the very early stages of the disease has not been established.

The most common adverse reactions are nausea, vomiting, anorexia, orthostatic hypotension, involuntary movements and psychiatric disturbances.

An American investigator, Dr. H. Brodie reported recently that adding another drug, MK485, reduces the side-effects and enables patients to tolerate larger doses of levodopa.—L.H.N.

The Epidemiology Of Lung Cancer

(Wynder, Ernest L., et al., *JAMA*: 203, 2221, September 28, 1970) No smoking or cessation of smoking is the most effective prevention against lung cancer. A study of 350 lung cancer patients confirmed the close association between cigarette smoking and lung cancer.

There is a decrease in relative risk for those patients developing lung cancer ten years after they have switched to filter cigarettes.

The risk also declines after complete cessation of smoking and appears to approach the level of non smokers after 13 years of non smoking.—L.H.N.

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Do You Really Know About AMA-ERF?

Have you thought about all the things AMA-ERF money can do, really thought about it? Do you know, for instance, that it is often the only funds a medical school may have available for instant use in emergency projects that are not included in the regular budget? Have you thought about how long the average three year period before budgeted money actually arrives would seem to a school which had some research that needed to be done right now?

In view of these things, it is easy to comprehend why our medical schools appreciate auxiliary contributions to AMA-ERF. Dr. Sherman M. Melinkoff, dean of the school of Medicine, the Center for Health Sciences at Los Angeles, describes AMA-ERF funds as fiscal shock troops essential to survival. "Coming as they do with no circumscription other than medical education and research, they are as indispensable to this School of Medicine as are shock troops to a sagging battle line."

Making donations to memorials isn't the only way to contribute to this priority project. Quality merchandise in the form of colorful stuffed animals, Christmas cards, golf balls, playing cards, chess sets, notepaper, jewelry and others are available through your chairman.

And don't forget the beautiful new "Today's Health Guide". It has over 550 pages packed with health information and guidance needed in almost any family, as well as transparencies of the organs and systems of the human body produced in full color.

"SERVICE IN THE SEVENTIES."

Mrs. R. C. L. Robertson, our national president has suggested the above slogan.

The Auxiliary role in the community can and should be of a catalytic nature. We can bring groups together on projects, cooperate with other agencies in programs, support existing programs in our areas, and participate as individual members in projects where we have an interest and talent. We need to let our communities know that we are actively interested and concerned in the health field and its problems. By a personal example and participation in projects promoting health, we can enhance the physician's image in our areas.

Pollution is a growing concern to all of us, as are the ways an individual can fight pollution. Your local community health chairman has received a suggested outline that can be used as a basis to start such a program. This will also show our youth that we are concerned, do care and are doing something positive about the problems with which they are so vitally concerned.

Again, I urge you to evaluate the programs offered. Survey your community needs. Assay your members' talents and potentials, remembering that they are busy people. Decide what projects need your emphasis. Then plan and act.

Your state officers and chairmen are ready to serve you—use them. We are here to offer suggestions and help, but only you can decide what is to be done. The credit for success and accomplishment belongs to you.

The above is an excerpt from I M A Wife, Published by Woman's Auxiliary to the Idaho Medical Association.

MEETING NOTICES

The information on this "notices" page is offered as a service of all specialty groups and allied health agencies in order to publicize postgraduate educational opportunities available to subscribers. The deadline for publication in Connecticut Medicine is the tenth of the month preceding, date of issue. Send copy to: Connecticut State Medical Society, 160 St. Ronan Street, New Haven, Connecticut 06511.

GENERAL

April 27-29—Tuesday-Thursday

179th Annual Meeting of the Connecticut State Medical Society

Hilton Hotel, Hartford, Connecticut

Theme for Sessions: Infectious Diseases

May 10-14—Monday-Friday

Intensive Care Units

St. Vincent's Hospital and Medical Center, New York City

Contact: American College of Physicians

4200 Pine Street, Philadelphia

May 19-22—Wednesday-Saturday

Immunologic Concepts of Hypersensitivity in Man

School of Medicine, State University of New York at Buffalo.

Contact: American College of Physicians

4200 Pine Street, Philadelphia.

May 26—Wednesday

1-4:30 P.M.

Symposium on Sickle Cell Anemia

Connecticut General Auditorium, Bloomfield

CARDIOLOGY

May 13-15—Thursday-Saturday

7th Annual Cardiovascular Symposium

St. Francis Hospital, Hartford

9:45 A.M.—Thursday

"Pathologic aspects of fatal acute myocardial infarction"

11:30 A.M.

"Newer concepts in the Wolff-Parkinson-White Syndrome"

2:00 P.M.

"The surgery of coronary artery disease"

3:45 P.M.

"Diagnosis and management of atrial arrhythmias"

9:45 A.M.—Friday

"Rehabilitation of patients with myocardial infarction"

11:30 A.M.

"Basic principles in the selection of patients with rheumatic heart disease for surgery"

2:00 P.M.

"Bradyarrhythmias in acute myocardial infarction"

3:45 P.M.

"Evaluation of bypass graft in the treatment of coronary artery disease"

10:00 A.M.—Saturday

"Pacemaker therapy of cardiac bradyarrhythmias and tachyarrhythmias"

INTERNAL MEDICINE AND SURGERY

September 15-June 1—Tuesday

Lecture Series: "Medical Emergencies"

Lawrence and Memorial Hospitals

New London, Connecticut

Contact: Edward Gipstein, M.D., Director of Medical Education. (442-0711 ext. 361).

OBSTETRICS AND GYNECOLOGY

May 3-6—Monday-Thursday

19th Annual Clinical Meeting of the American College of Obstetricians and Gynecologists.

San Francisco, California

Postgraduate Course: May 1 and 2

Contact: Donald F. Richardson, 79 West Monroe Street, Chicago, Illinois

ONCOLOGY

Series of Lectures: St. Raphael's Hospital, New Haven Thursdays at 12 noon

April 29

Adult Acute Leukemia—Roland Skeel, M.D.

May 6

Case Presentation

May 13

Advanced Ovarian Carcinoma

Robert Knapp, M.D.

May 20

Myeloproliferative Syndromes—Rose Papac, M.D.

May 27

Case Presentation

June 3

Lysozyme in Leukemia—Oswaldo Castro, M.D.

June 10

Case Presentation

OPHTHALMOLOGY

May 6-7—Thursday-Friday

44th Annual New York Eye and Ear Infirmary

Clinical Conference: Cataracts, Pediatric Ophthalmology, Glaucoma.

Biltmore Hotel, New York City

May 8—Saturday

10th Annual Contact Lens Symposium

New York Eye and Ear Infirmary, 310 East 14th Street, New York City

"Post-fitting Problems with Hard and Soft Contact Lenses."

OTOLARYNGOLOGY

May 3-5—Monday-Wednesday

"The Vestibular System in Otologic Diagnosis"

New York Eye and Ear Infirmary, 310 East Fourteenth Street, New York, New York 10003.

PSYCHIATRY

Series of Lectures at Connecticut Valley Hospital, Middletown

April 20—Tuesday 10:30 A.M.

"What Has Happened to Psychotherapy"—George Mora, M.D.

May 21—Friday 2:00 P.M.

"Recent Developments in Our Understanding of Physical Dependence Produced by Addictive Agents"—Arnold J. Friedhoff, M.D.

June 8—Tuesday 10:30 A.M.

"The Psychiatric Hospital: Status, Use and Abuse"—John H. Houck, M.D.

Pesticide Poisoning In Children

(JAMA: 211, 1979, 1970, DePalma, A. E., et al.)

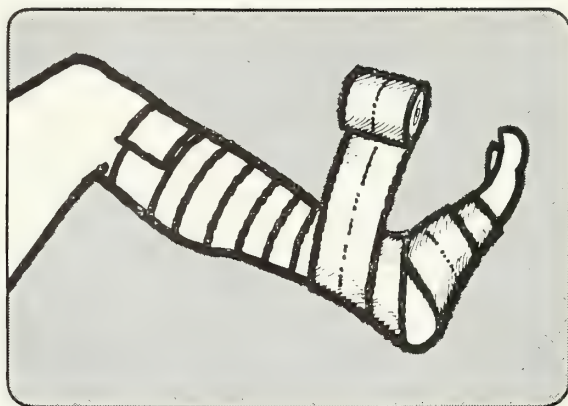
Two siblings were poisoned with parathion, chlordane, and dimpylate (Diazinon) when they ingested the contents of an unlabeled jar. One of the children died despite atropine sulfate and pralidoxime chloride therapy. The patients had the highest serum gastric contents and tissue levels of parathion, chlordane, and dimpylate ever recorded, to our knowledge. The onset of symptoms was rapid and progressed quickly to coma and convulsions. Cardiac arrest occurred in the fatal case. Blood cholinesterase levels were markedly decreased in both patients, and urine paranitrophenol levels remained elevated for more than a week in the survivor. The danger of removing a toxic substance from its original container and placing it elsewhere is obvious. Rapid, aggressive, and specific therapy for organophosphate poisoning must be instituted even before diagnosis is confirmed by laboratory procedures.—L.H.N.

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BOOK REVIEWS

CLINICAL GASTROENTEROLOGY by **Howard M. Spiro, M.D.** 400 illustrations. Macmillan Co. Publishers, 866 Third Avenue, New York 10022. 1970, 1011 pp. \$35.00.

Reviewed by: LOUIS H. NAHUM

This is an authoritative well-illustrated volume dealing with the many diseases that can affect the human digestive system. Congenital disorders, infections motor abnormalities and structural disorders: metabolic, inflammatory disorders and tumors. The author is a professor of Medicine at Yale who has taken on the task of treating patients, doing consultations, editorial advice to several learned journals, carrying on research and training gastro-enterologists. As a part of this last obligation he wrote this text-book—Clinical Gastro-enterology for his students and the medical profession at large.

The science of medicine is advancing so rapidly that knowledge is outdated often in less than ten years and at the same time so specialized that few textbooks now appear from the pen of one author. Most texts accordingly are multiauthored and the Editor usually writes one or two of the chapters. This book has 60 chapters in 9 sections all written by professor Spiro himself. This herculean task was accomplished by the author beginning dictation every morning at 5 A.M. to 7 for 18 months. After the first draft he rewrote it and this book is the third draft. It covers the diagnosis and treatment of diseases of the whole digestive tract, the esophagus, stomach, small and large intestine, rectum, liver and pancreas.

In the opening chapter the author is teaching his students how to obtain a correct story from the person, how to obtain correct descriptions of a person's complaint, how to evaluate a "pain", a pressure, a cramp, how to go about asking the patient negative rather than leading questions (not to put ideas into his patient's mind). Then he explains correct methods of examining a patient, how to avoid errors and proceed to obtain needed evidence to make a diagnosis. The book is admirable for its use of examples to illustrate principles; when we are told the duodenum is a "pacemaker of the gut" responsible for starting its movements we understand because of its analogy to the heart. We are also told the analogy of the gut to the kidney in the conservation of salt and water. Another example is the circulation of substances absorbed from the gut by the blood and lymph brought to the liver and through the bile reintroduced into the gut.

To give one an idea of the erudition of the author the following subjects which have undergone radical changes due to physiological and biochemical advances are all the new ideas about the mucosa of the stomach and intestines; the secretions of the stomach and pancreas, the movements of the stomach and small and larger intestine, how the food is broken down by enzymes which are derived from cells in the lining of the tract, how these nutrients are then absorbed. New ideas about bacterial inhabitants of the gut, multiple gland growths, deficiencies in enzymes that operate in digestion, special problems of pediatric gastro-enterology, the role of intensive care unit in clinical gastro-enterology.

Ordinarily such subjects would have been covered by different specialists. Not so in this volume. The subjects are

dealt with a knowledge and maturity that could not have been written better by individual specialists. Throughout the author is writing because he is aware of what physicians need to know, to have their knowledge updated in understanding of clinical phenomena. The greatest emphasis is on the more common gastro-intestinal disorders.

Various operations for duodenal ulcer, hemorrhoids, fissure and fistula are discussed as though the author followed all his patients to the operating table and after. It is clear that Professor Spiro has a profound understanding of the surgical procedures. He debunks operations for pancreatitis as well as the medical measures in acute appendicitis.

There are over 400 illustrations including carefully reproduced X-rays, gross specimens, histologic sections and anatomic drawings. Up to date bibliographies follow each chapter while the classics are not left out. The appendix provides instructions for various diets, bland, restricted fibers, lactose free, controlled lactose diet, gluten diet, high fat low carbohydrate diet.

We have here a six and a half pound volume printed on highly glossy paper necessary for perfection, with insight into correct concepts that might be helpful in daily practice yet it is not tedious. It has interest for the practicing physician, pediatrician, those interested in old age, as well as the surgeon.

There is one quality about this book that is unique. It is epigrammatic; such gems abound as: a physician must be direct—a single point of view is better than none at all, "in certain circumstances action is more important than doubt"; there must be some mediation between the scientist in his empyrean chambers and the practitioner in the trenches. "A term dear to the obscurantist odyndophagia". Accordingly we find a book easy and delightful reading as an example of a first class presentation but also as literature.

Sadly we have become too constricted in our scientific writing. This book while affording authoritative information is a pleasure to read because of the elegant quality of the language. This kind of writing should help to reactivate the long forgotten art of gracious expression in scientific representations.

CRISIS FLEETING: Original Reports on Military Medicine in India and Burma in the Second World War. Compiled and edited by **James H. Stone.** 423 pp. Washington: U.S. Government Printing Office, 1969. \$3.75.

Reviewed by: HERBERT LEVINE

This volume represents a departure from the usual historical work dealing with medicine during the Second World War. It is not a compendium of statistics and logistical data, which in general makes for dull reading. Instead, it consists of five sections written in the form of diaries and reports during the actual campaigns, and is arranged, as William H. Crosby put it in a previous review in the *New England Journal of Medicine*, "so that each section moves the reader one ring deeper into hell".

The first section is the rather witty diary of a Medical Corps sergeant in charge of an aid station on the Ledo Road during the Burma campaign. The second section, entitled,



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"Chinese Liason Detail", is an account by Walter F. Jones of his role as a medical liason officer between American and Chinese forces. In this essay one encounters stark descriptions of the horrible toll of civilian lives lost in this campaign as the Japanese withdrew from Burma. Jones points out that the mass exodus of civilians known as the refugee retreat of 1942 involved chiefly Indians, English, Chinese, and mixed breeds rather than native Burmese. It is impossible to estimate the numbers involved, but one British officer counted 5,000 corpses on a single hillside in the Tagap area. The third section, "Tamraz Diary", is the journal of the surgeon in charge of the hospital system which serviced Stilwell's communications zone in India and Burma, which is interesting not only from the standpoint of its revelations about Col. Tamraz's personality, but also for its insights into the problem of achieving a difficult medical task with little support from above in the military hierarchy.

The fourth and fifth sections, by British and American medical officers serving with Wingate's and Stilwell's forces, respectively, are the most appalling portions of the book. Here one learns of the needless morbidity and mortality occasioned by the "prehistoric attitude" of high-ranking officers "toward hygiene, sanitation, and medical discipline". Major General W. J. Officer, in describing the medical aspects of Wingate's campaign, points out that little attention was paid to such obvious measures as malaria prophylaxis. At one point, out of a total troop strength of 17,000, 5,400 were hospitalized for illness, and 57% of these were for malaria, despite the availability of atabrine. These sections are replete with similar examples of terrible wastage of lives because of inadequate emphasis on medical considerations at the highest levels. Both these commanders exhibited gross indifference to the problems of health, sanitation, and engineering that faced their troops in these areas.

The total impact of this volume is a horrible revelation of the loss of lives, both civilian and military, from non-combat causes in a military situation. It does not require a totalitarian dictatorship to result in irrational leadership leading directly to mass mortality.

CHANGES OF ADDRESS

Notice of change of address should be sent not less than four weeks prior to the date the change becomes effective. Please send the address label from one of the issues you've just received, to help us make the change promptly, and to insure uninterrupted delivery of your copies of the Journal, along with the new address and your zip code to:

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WOMAN's AUXILIARY ANNUAL MEETING AND LUNCHEON

**Wednesday, April 28th
10:30 A.M.**

Wethersfield Country Club
Wethersfield, Connecticut

Followed by:

Special Medical Art Exhibit

3-6 P.M.

Wadsworth Atheneum
Hartford, Connecticut

Connecticut Regional Medical Program

Supported by CRMP for the third consecutive year (1971 award: \$93,000) continuing care program offers "an organized hospital-based coordinating service to provide continuing health care, discharge planning, and home health care for patients with chronic disease or disability." Yale-New Haven Hospital support for the program is approximately \$150,000.

Dr. Harold N. Willard made the comments in a recent interview with CRMP staff. Dr. Willard is also associate professor of Internal Medicine at the Yale University School of Medicine and Director of Yale-New Haven Hospital's Continuing Care Department which includes a 20-bed intermediate care unit.

A unit is being set up at Yale-New Haven Hospital "for patients who have passed the acute stage of illness and have the potential to respond to an intensive rehabilitation program within a period of six weeks. However, the average stay is 16 days." More than 40 per cent of the unit's patients are referred by private physicians. The census includes heart and stroke patients, diabetics, amputees, persons recovering from bone fractures, undergoing cancer therapy, and receiving treatment for skin disease.

The physician now thinks in terms of how he can best direct the future course of his patient to the extent that the patient—a diabetic, for example—can learn to live with his disease and take better care of himself, and return to optimum functioning.

A patient who is over the acute phase of his illness may still need to be hospitalized but does not have the necessary special resources for rehabilitation in the atmosphere of the acute ward. In the Continuing Care Unit he is prepared for discharge, often at sessions attended by members of his family, and is trained to take responsibility in handling his own disease.

Dr. Willard sees three immediate gains in a patient's stay at his unit: 1) with intensive acute rehabilitation a patient can often avoid transfer to a convalescent hospital and go home instead; 2) it diminishes the chance of recurrent admission to the hospital in the future; 3) a precise medical plan in cooperation with the private physician can be made

for another health care facility e.g. Gaylord, Laurel Heights, extended care facility.

"The physician sees my ward as a place where the patient learns those things he must know to consolidate the gains obtained from acute treatment," Dr. Willard stated.

He is enthusiastic about the home care program being developed by a planning committee through the Continuing Care Advisory Committee. Connecticut Blue Cross will pay for services provided to subscribers related to a hospital-based home care program. The physician will prescribe the services available through community health care agencies under contract to the hospital or, where appropriate, by hospital personnel.

The home care component of the demonstration program will become operational by late spring. Its benefits will be several. For the hospital, it will free a bed for a more acutely ill patient. For the patient, it will reduce his overall health care bill. Dr. Willard pointed out that Blue Cross will pay for three days of home care for each day of hospital eligibility in a person's contract.

He sees the Continuing Care Demonstration Program as having an impact on the community also. "It puts the hospital in a real partnership with the community, working alongside other agencies and community providers to insure continuing care." CRMP is hopeful that this demonstration program will stimulate comparable developments in other communities in Connecticut.

Henry T. Clark, Jr., M.D., *Director*

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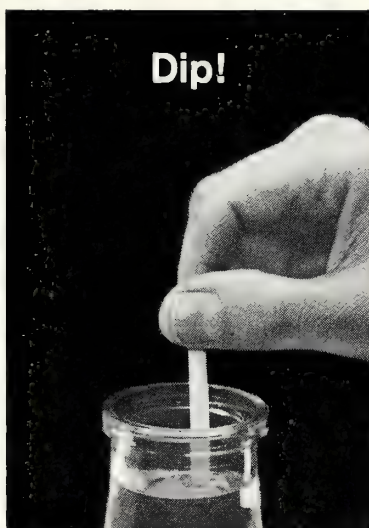
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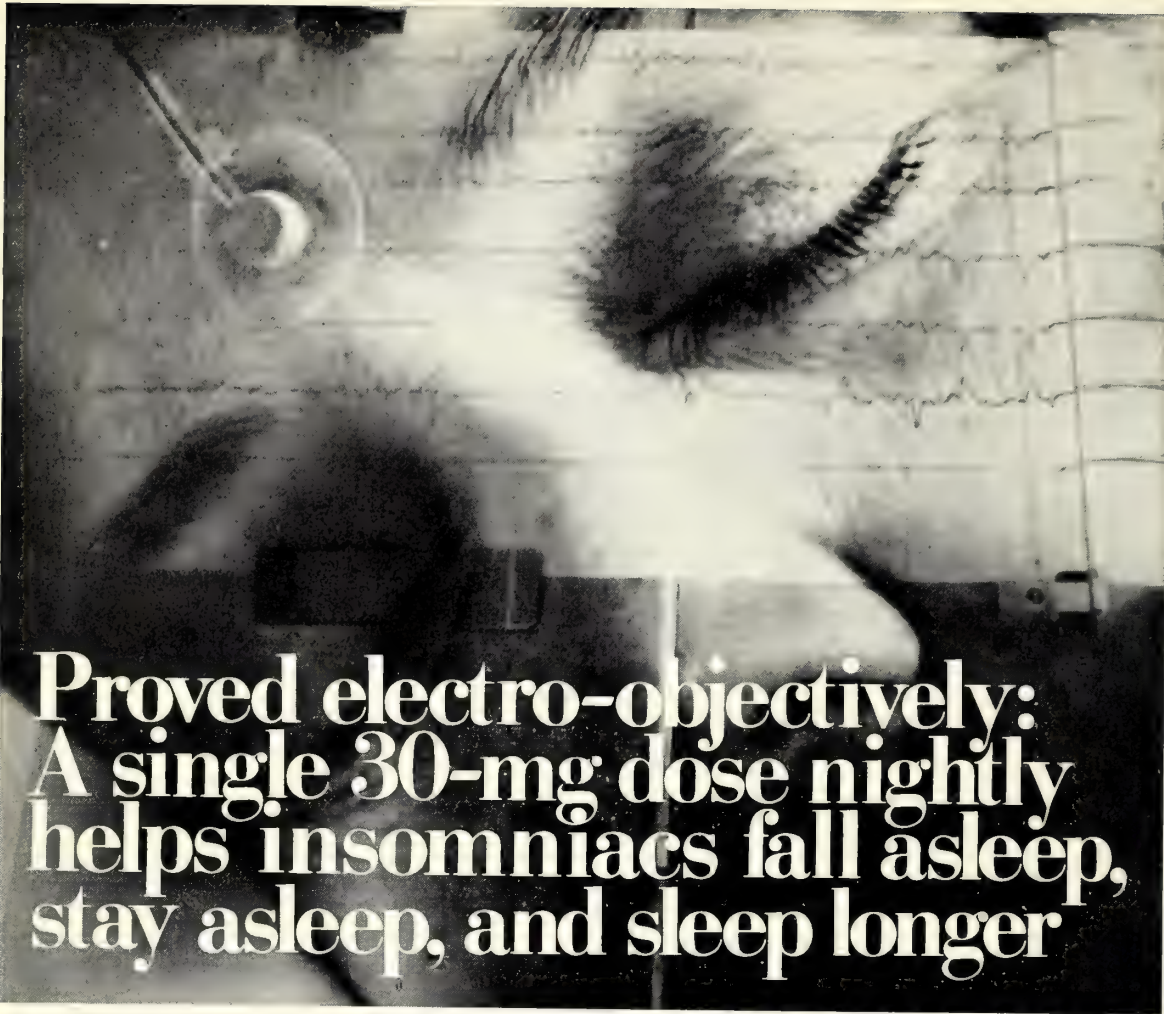


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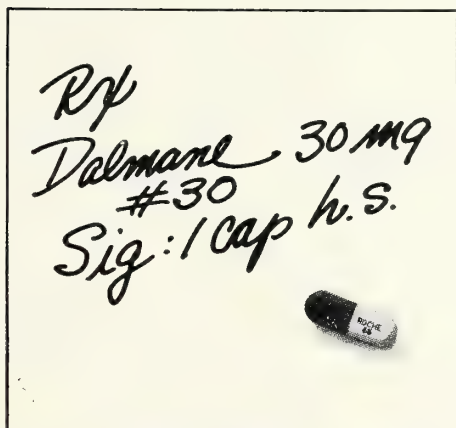
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References: 1. Kales, A., et al.: "Effectiveness of Sleep Medications: All-Night EEG Studies of Hypnotic Drugs," in Proc. 7th Internat. Cong. Electroencephal. and Clin. Neurophysiol., San Diego, Calif., Sept. 13-19, 1969. 2. Kales, A., et al.: "Psychophysiological and Biochemical Changes Following Use and Withdrawal of Hypnotics," in Kales, A. (ed): *Sleep: Physiology and Pathology*, Phila., Lippincott, 1969, p. 331. 3. Data on file, Medical Department, Hoffmann-La Roche Inc.



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Precautions: In elderly and debilitated, initial dosage should be limited to 15 mg to preclude oversedation, dizziness and/or ataxia. If combined with other drugs having hypnotic or CNS-depressant effects, consider potential additive effects. Employ usual precautions in patients who are severely depressed, or with latent depression or suicidal tendencies. Periodic blood counts and liver and kidney function tests are advised during repeated therapy. Observe usual precautions in presence of impaired renal or hepatic function.

Adverse Reactions: Dizziness, drowsiness, lightheadedness, staggering, ataxia and falling have occurred, particularly in elderly or debilitated patients. Severe sedation, lethargy, disorientation and coma, probably indicative of drug intolerance or overdosage, have been reported. Also reported were headache, heartburn, upset stomach, nausea, vomiting, diarrhea, constipation, GI pain, nervousness, talkativeness, apprehension, irritability, weakness, palpitations, chest pains, body and joint pains and GU complaints. There have also been rare occurrences of sweating, flushes, difficulty in focusing, blurred vision, burning eyes, faintness, hypotension, shortness of breath, pruritus, skin rash, dry mouth, bitter taste, excessive salivation, anorexia, euphoria, depression, slurred speech, confusion, restlessness, hallucinations and elevated SGOT, SGPT, total and direct bilirubins and alkaline phosphatase. Paradoxical reactions, e.g., excitement, stimulation and hyperactivity, have also been reported in rare instances.



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Subscription rate for non-members \$15.00; Student-Members, interns and residents \$7.50; single copy \$1.50.

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THE PRESIDENT'S PAGE

On this first opportunity to address the members of the Connecticut State Medical Society, I must begin by expressing my sincere gratitude for having been elected to the office of president. This is an honor accompanied by many duties and obligations. Although these functions become apparent while serving as president-elect, they are only fully appreciated upon ascending to the presidency.

The duties are, for the most part, pleasant and related entirely to the honor of the office such as representing the Society at county associations' meetings, and those of other groups less closely related to medicine.

On some occasions, however, the office of the president imposes obligations requiring background knowledge of the multitudinous affairs of the State Society. The performance of these obligations is obviously more of an assignment than one man could hope to accomplish. Fortunately, the president can count on the assistance of many to keep him well informed regarding the Society's many activities.

The Council, the governing body of the Society, undertakes the study of all issues and problems presented by members, county associations, medical schools, C.R.M.P., and other affiliated groups. Its deliberations provide the background for much of the information the president must have.

The Society's numerous committees lend their support to the president by providing knowledge on a variety of subjects. They are responsible both to the Council and to the House of Delegates. Often, the committees are charged with tasks of great magnitude, requiring many hours of research and study, and their findings may be responsible for major changes of policy of the Society by being reviewed by the Council and passed on to the House of Delegates.

Finally, the House of Delegates must approve all major policy decisions in order that these actions may become official and representative of the members at large.

The Society is fortunate to have an extraordinarily efficient executive staff, capable of collating, organizing, reporting, and publishing an enormous amount of information for the Council, the House of Delegates, and the membership. These staff activities also serve to keep the president of your Society informed on matters of interest and concern.

This review is intended to show the chain of responsibility from the president to the individual member. It also illustrates the "advise and consent" provision that is built into our democratic system to aid the president in getting his views heard and evaluated so that they may receive whatever action they deserve.

This whole process can also work in the reverse direction. A member may bring ideas, complaints and criticisms, adverse or constructive, to his local society, county association, councilor, or delegate to the State Society where they can be reviewed. I strongly urge the members to avail themselves of these opportunities. Many valuable suggestions proposed in the past have led to positive action. I have great faith that if the membership continues to contribute ideas, the activities of the Society will be of ever increasing benefit to the medical profession and to the public.

My task this year will be to support this system, to contribute what I can to it, and to help guide it to responsible decisions.

Frederick C. Weber, Jr., M.D.

FREDERICK C. WEBER, JR., M.D.

President

Born Washington D.C., July 12, 1911

Yale University, B.S., 1932

Johns Hopkins University School of Medicine, M.D., 1936

Phi Beta Kappa; Alpha Omega Alpha

Intern, Johns Hopkins Hospital, 1936-37, Medicine

Assistant Resident, New York Hospital, 1937-40, Medicine

Instructor in Medicine, Cornell Medical School, 1940-42, 1946-50

Captain-Lt.Colonel, Army Medical Corps, 1942-46

Chief, Medical Service, 9th General Hospital, (South West Pacific Area)

American Board of Internal Medicine, 1943

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Director of Department of Medicine, 1960-67

Member, Board of Health, Town of Greenwich, 1954-60

Endocrine Society

American College of Physicians, Fellow, 1952

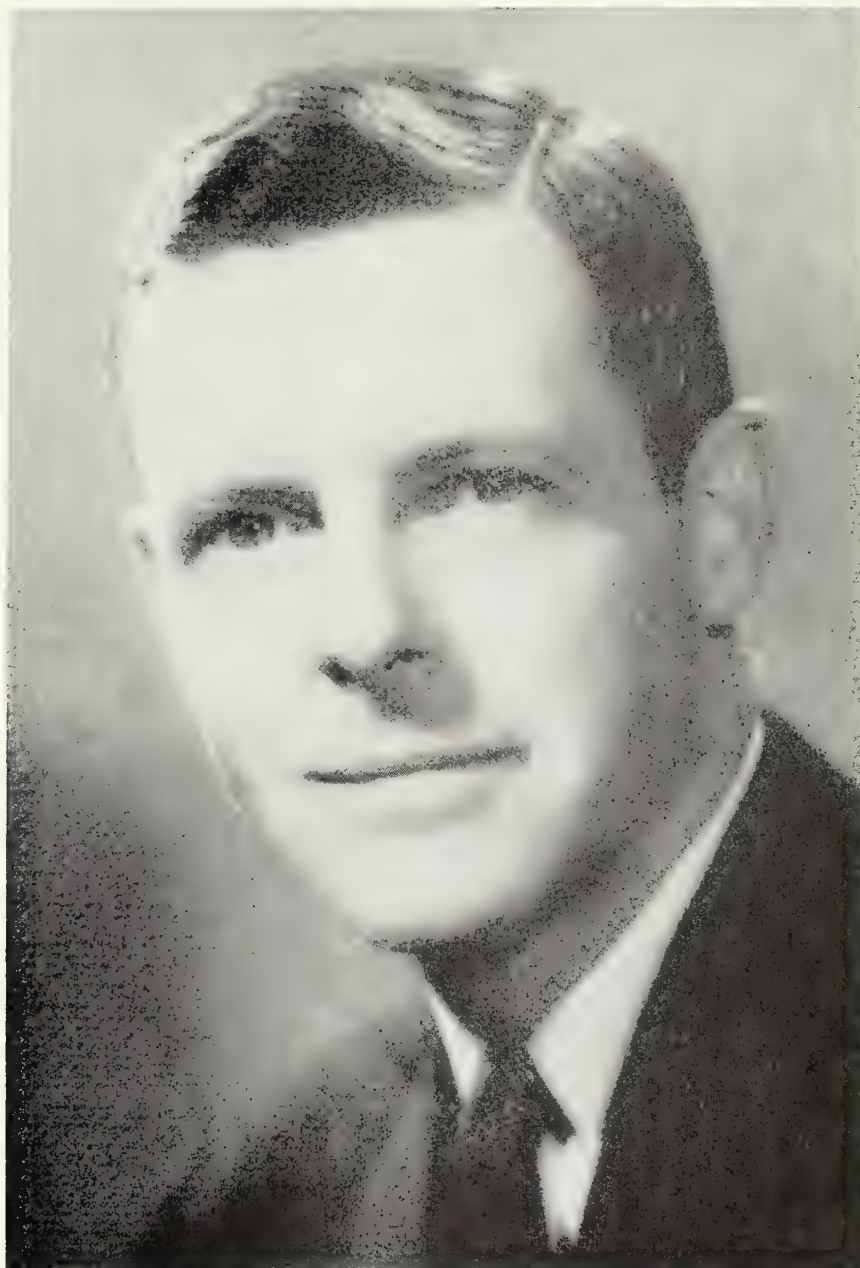
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Fairfield County Medical Association, President, 1965-66

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The Association of Mesenteric Lymphadenitis with A Scotochromogenic Mycobacterium

Warren Heller, M.D., Anthony J. Arena, M.D., and Richard Quintiliani, M.D.

Introduction

Although atypical mycobacterium were originally felt to be saprophytes, in recent years they have been shown to be important pathogens. Reports of disease due to these organisms have appeared with increasing frequency. They have been associated mainly with pulmonary disease in adults and cervical adenitis in children. However, they have also been implicated in disease involving other organs of the body. In this communication, we report a patient who developed mesenteric lymphadenitis, probably on the basis of an infection with a scotochromogenic mycobacterium.

Case Report

D.S., a 23 year old hospital corpsman, was admitted to the hospital because of intermittent fever and diarrhea, and easy fatigability of four months' duration.

Four months prior to admission, he was hospitalized for evaluation of fever and cramps of the right lower quadrant. Because of these complaints and a barium enema showing slight deformity of the cecum, an exploratory laparotomy was performed. At the time of surgery, a chronically inflamed Meckel's diverticulum and numerous enlarged mesenteric lymph nodes were found. The cecal deformity was secondary to some fibrous adhesions. The Meckel's diverticulum, appendix, and two enlarged mesenteric nodes were sent for pathologic and bacteriologic study. On histologic examination, the Meckel's diverticulum and lymph nodes showed evidence of acute and chronic inflammatory response but no granulomas or caseation necrosis. The appendix was normal. Culture of the mesenteric nodes yielded group 2 scotochromogens.

In the immediate postoperative period, intermittent spiking fevers and night sweats occurred without evidence of wound, urinary or pulmonary infection. Nevertheless, he was discharged to be followed as an outpatient. During the subsequent four months, he continued to complain of easy fatig-

ability and occasional fever and diarrhea. Because of these symptoms and the growth of scotochromogens from the lymph node after his discharge, the patient was rehospitalized.

Prior to entering the United States Navy in July 1964, he attended agricultural school and worked part-time on a farm and at a feed company handling grains and fertilizer.

On physical examination, the patient appeared well with no temperature elevation. There was no lymphadenopathy, hepatomegaly, or splenomegaly. The remainder of the examination was also unremarkable.

Pertinent laboratory studies included a normal hematocrit, white blood cell count and differential, fasting blood sugar, blood urea nitrogen, VDRL, protein electrophoresis and urinalysis. The corrected sedimentation rate was 6 mm per hour. Repeated chest films, including apical lordotic views, were within normal limits. Induced sputa, gastric aspirates, and a 24 hour urine culture were negative for acid fast bacilli. Intermediate strength PPD skin test (0.0001 mg) and second strength PPD (0.005 mg) produced 0 mm and 5 mm of induration, respectively.

He was treated with cycloserine 250 mg twice a day and isoniazide 150 mg twice a day for one year with disappearance of all his symptoms after three months.

Discussion

In the 1950's, mycobacteria which differed in certain growth characteristics from *Mycobacterium tuberculosis* and *Mycobacterium Bovis* were called "atypical," "anonymous," or "unclassified." On the basis of different cultural properties, Runyon in 1959 proposed the subdivision of atypical mycobacterium into four groups: Group 1—photochromogens; Group 2—scotochromogens; Group 3—non-photochromogens (Battey type); and Group 4—rapid growers.¹

Definite diagnosis with an atypical mycobacterium is often difficult. The presence of a negative intermediate strength (0.0001 mg) PPD skin test and a positive second strength (0.005 mg) PPD may be an indicator of present or previous infection with one of these organisms. Our patient had a negative tuberculin skin reaction to both intermediate and second strength PPD. The additional use of atypical mycobacterium skin tests are helpful but, at the present moment, the antigens are difficult to obtain.

DR. WARREN HELLER, Internist, Bridgeport, Conn.

DR. ANTHONY J. ARENA, General Surgeon, Middletown, Conn.

DR. RICHARD QUINTILIANI, Chairman, Department of Medicine, Middlesex Memorial Hospital, Middletown, Conn., and Assistant Professor of Medicine, University of Connecticut, Hartford, Conn.

As a result, the diagnosis must often be made on the basis of the demonstration of the organism on tissue culture and, even in this situation, it may merely be a contaminant.

Since scotochromogenic mycobacterium can be cultured from the nose, throat and bronchial tree of normal persons, their recovery in association with a pulmonary lesion does not prove a cause-and-effect relation. Acceptance for an etiological role for these organisms has been mainly restricted to lymphadenitis. This relationship has developed from the frequent case reports of children with cervical lymphadenitis in whom scotochromogens have been isolated. Salyer et al reported 38 cases of cervical adenitis in children seen at one medical center (Childrens Medical Center, Dallas) from 1956 to 1966.² In fact, the scotochromogens have often been referred to as the "Scrofula" sub-group because of this propensity to produce cervical adenitis. Because of this association of cervical lymphadenitis with scotochromogenic mycobacterium, it was felt that the recovery of a scotochromogenic mycobacterium from the mesenteric lymph node in our patient suggested that it was acting as a pathogen rather than as a contaminant. However, it must be emphasized that the association of atypical mycobacterium with lymphadenitis has been almost entirely with respect to cervical and auricular lymph nodes. We are aware of only one other report of mesenteric adenitis from these organisms and it occurred as part of a disseminated mycobacteriosis in a patient with leukemia.³ This paucity of case reports of mesen-

teric lymphadenitis from atypical mycobacterium may actually be the result of infrequent routine culture for these organisms from lymph nodes removed at the time of surgery. More cultures of mesenteric lymph nodes in patients with and without evidence of adenitis are needed to clarify this point.

Following surgery, the patient exhibited intermittent fever, night sweats, fatigue and abdominal pain in the absence of any readily discernible cause. Because of this situation and the results of the lymph node culture, the patient was felt to have persistent symptoms on the basis of infection with the scotochromogenic mycobacterium and, as a result, was started on anti-tuberculous therapy. The best treatment for this type of patient has not been determined, but it is well known that these organisms tend to be resistant to the customary anti-tuberculous drugs, such as isoniazid, paraminosalicylic acid and streptomycin. The patient was treated with a combination of cycloserine and isoniazid with a good response as indicated by disappearance of all his symptoms.

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Hemobilia Associated with Hemorrhagic Cholecystitis in a Patient with Alcoholic Cirrhosis

William C. Butterfield, M.D., and Upil Choi, M.D.

Hemobilia or massive bleeding through the bile ducts into the upper G.I. tract is uncommon. The term hemobilia was first introduced by Sandblom to denote bleeding into the biliary tract following a subcapsular liver injury.¹ At the present time, the term is used to indicate hemorrhage into the biliary tract from any cause, the usual source of bleeding being the liver, gallbladder or bile ducts. Hemobilia is also synonymous with the symptom complex of jaundice, biliary colic, hematemesis and melena. A classification of hemobilia based on the sources of hemorrhage is shown in Table 1 which is a modification of a similar one by Kerr, Mensh and Gould.²

The most common cause of hemobilia is traumatic injury to the liver while cholecystitis is a very rare cause of the syndrome. Using strict criteria, Michel and Dessler (1968)³ were able to find 20 cases in the English literature in which the only cause for the hemobilia that could be found was the cholecystitis itself. It is not clear why the inflamed gallbladder bleeds, but about 70% of the cases had documented ulcerations in the mucosal lining and most of these were associated with gall stones, suggesting that erosion of the wall by the stones may have been important (Figure 1).³⁻¹⁸ Arteriosclerotic changes and necrotizing infection are other possibilities to account for the bleeding. When the gallbladder bleeds, it often becomes distended and can be palpated below the right costal margin so that a right upper quadrant mass was present in almost 40% of the reported patients. This was the only consistent diagnostic sign found on physical examination. Jaundice was present in 38% of the patients. Signs of blood loss were not always obvious since bleeding varied from the dramatically massive to the slow and insidious. Un-

TABLE 1
REPORTED CAUSES OF HEMOBILIA

A. Intrahepatic
1. Post-traumatic
2. Intrahepatic arterial aneurysms
3. Tumors
4. Abscess
5. Yellow atrophy
B. Extrahepatic
1. Bile ducts
a. Stone
b. Ulcer
(1) T-tube erosion
(2) Ectopic gastric mucosa
c. Tumor
d. Rupture of adjacent aneurysm into duct
(1) Cystic artery
(2) Hepatic artery
(3) Gastroduodenal artery
2. Gallbladder
a. Cholecystitis glandularis proliferans
b. Hemorrhagic cholecystitis
c. Tumor
d. Ectopic mucosa
(1) Gastric
(2) Pancreatic

fortunately, the clinical diagnosis in many of these patients is not always apparent and too often the diagnosis is made at autopsy, but cholecystectomy is often curative when the diagnosis is made.

A patient with hemobilia arising from hemorrhagic cholecystitis is reported because of (1) the rarity of hemorrhagic cholecystitis itself and (2) the association of hemorrhagic cholecystitis with alcoholic cirrhosis, this being the first documented case of its kind of which the authors are aware.

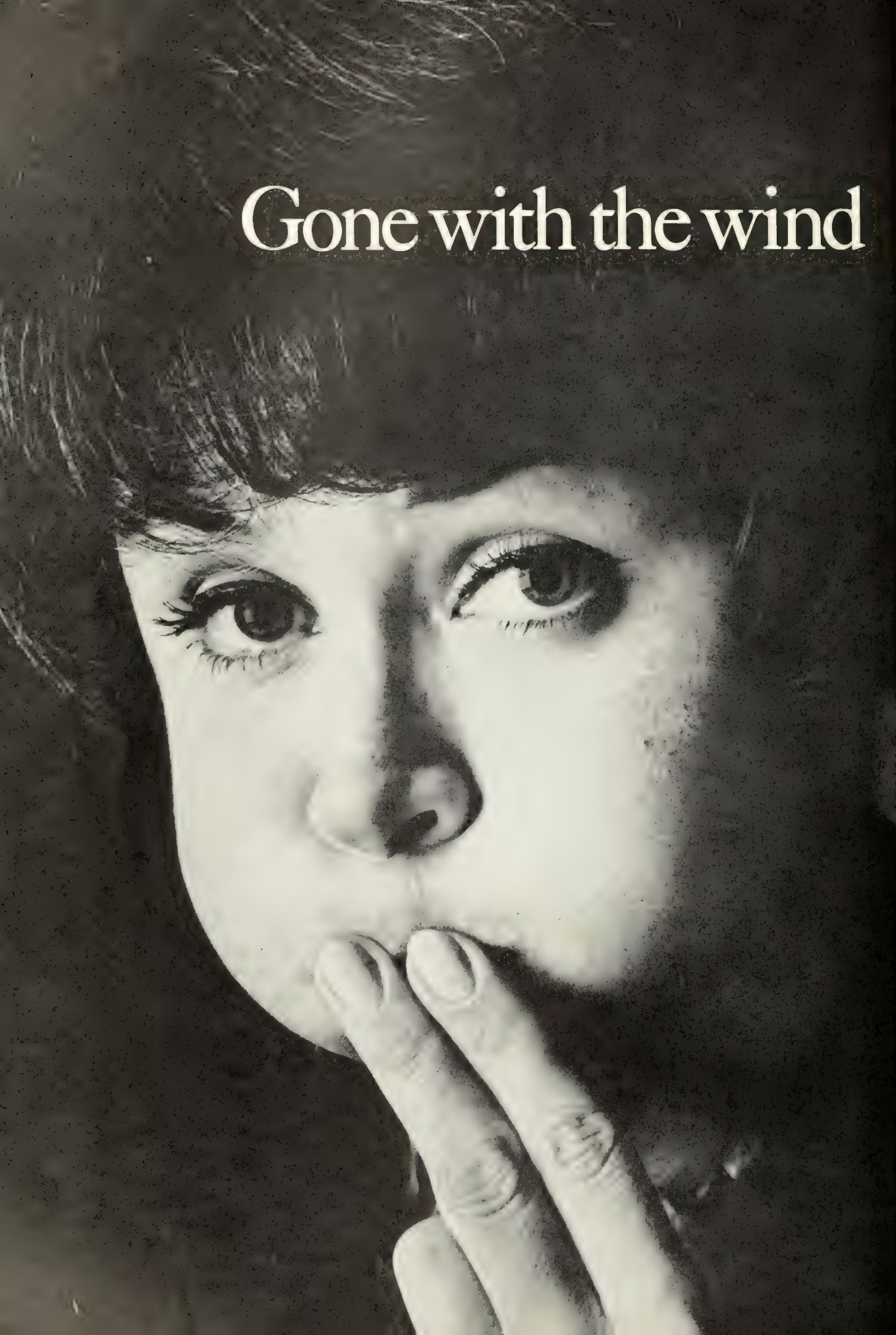
Case Report

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A Negro man, 40 years of age, was admitted to the hospital because of jaundice and weight loss. The patient was a chronic alcoholic of many years duration. For three months he had noted increasing jaundice, anorexia, a weight loss of 60 lbs., intermittent vomiting and painful lower extremities. On physical examination he appeared dehydrated, cachectic

Gone with the wind



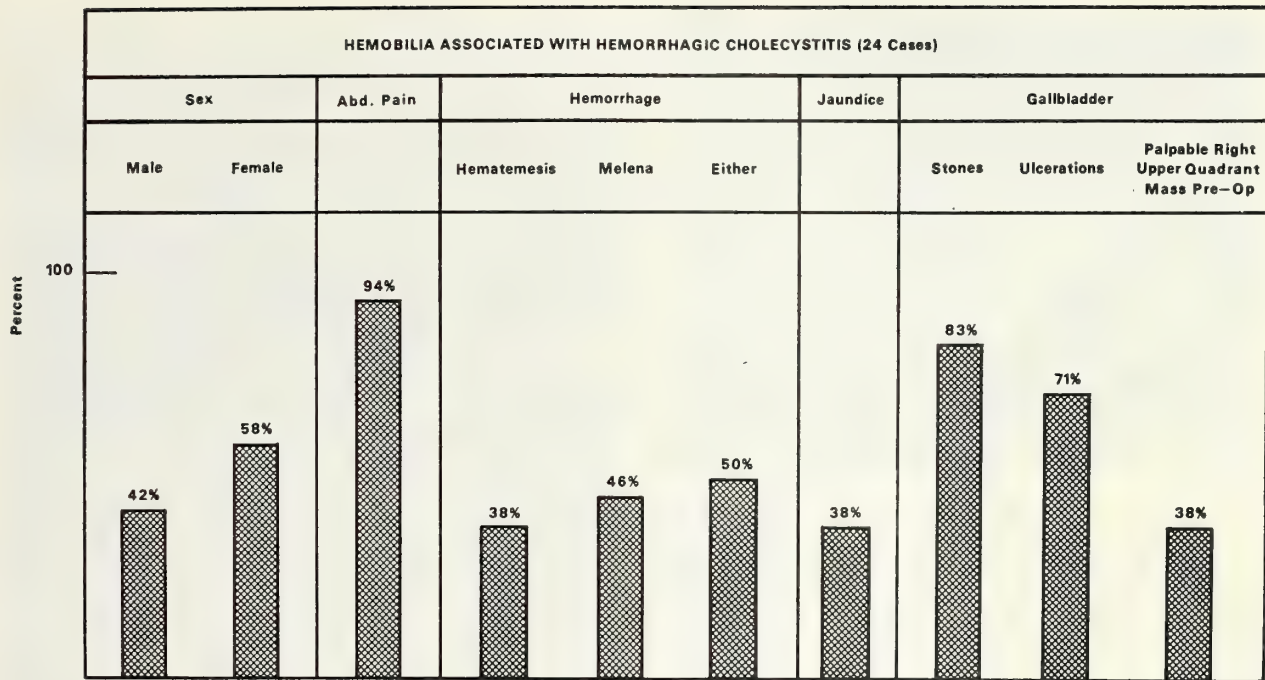


Figure 1

and mentally obtunded. Blood pressure was 80/60, pulse rate 180/min. and temperature normal. Other positive findings were jaundice, an enlarged liver 13 cm. below the right costal margin, minimal knee and ankle jerks and hyperesthesia over the legs. Hgb. was 11.2 gm/100 ml, WBC 10,300/mm³ and urine 2+ albumin. Liver function tests included an alkaline phosphatase of 79 mU/ml (normal 20-48), total bilirubin of 15.4 mg/100 ml (6.8 mg/100 ml direct), albumin 1.7 gm/100 ml, globulin 6 gm/100 ml, cholesterol 173 mg/100 ml, SGOT 119 mU/ml, SGPT 26 mU/ml and LDH 126 mU/ml. FBS was 142 mg/100 ml and BUN 6 mg/100 ml. Serum electrolytes were Na 126 mEq/L, K 3.1 mEq/L, Cl 96 mEq/L, CO₂ 24 mEq/Liter.

Alcoholic cirrhosis, peripheral neuropathy and a possible malignancy of the G.I. tract were the initial diagnoses. An upper gastrointestinal roentgenographic study demonstrated a constant narrowing of the immediate post-bulbar area of the duodenum, "possibly due to the enlargement of the common duct or adjacent gallbladder."

The patient was rehydrated and given KCl and vitamins but he became progressively drowsy. Valium, which the patient had been taking, was discontinued but there was no improvement and he developed a "liver flap." Cathartics, Neomycin and a high carbohydrate diet were instituted. On the seventh hospital day the hematocrit dropped from 34% to 28% and the following morning he vomited bright red blood, passed a tarry stool and became hypotensive. Whole blood transfusions were administered and repeat upper gastrointestinal films showed irregularities in the lower third of the esophagus suspect of varices. The patient appeared moribund and operation was considered inadvisable. A Blakemore tube was inserted in an effort to control the bleeding. The bleeding did not stop, however, and the patient subsequently expired.

At autopsy the heart was unremarkable, weighing 300 grams, and the lungs were free of inflammation and hemorrhage. The liver was 1550 grams in weight, firm and finely

nodular and microscopic examination revealed relatively uniform septal scarring and distorted parenchymal regenerating nodules characteristic of nutritional or alcoholic cirrhosis. Proliferation of bile ductules in the portal areas and bile stasis within the ductules were noted. The hepatic radicles of the bile ducts were unremarkable and there was no evidence of a tear of the liver parenchyma. The hepatic artery and vein were intact and no erosion was found. The gallbladder was not distended and had a serosal surface that was shiny and smooth. The lumen was filled with fresh blood and admixed with small black stones while the wall was thickened and fibrotic and the mucosa hemorrhagic and shaggy (Figure 2). Microscopically, the mucosal surface was nearly totally replaced by a hemorrhagic exudate composed of red blood cells enmeshed in fibrin (Figure 3). Acute and chronic inflammatory cells and hemosiderin-laden macrophages were present in smaller numbers and portions of necrotic mucosa were seen in the hemorrhagic areas. Beneath this layer, the mucosa and submucosa showed leukocytic infiltration, vascularization and fibrosis. In those few areas where hemorrhage was not extensive, a richly vascular granulation tissue, containing occasional foreign body giant cells and fragments of gall stones, replaced the normal mucosa. The cystic and common ducts were patent. There were erosions at the gastro-esophageal junction where the Blakemore tube had been positioned and there was no evidence of esophageal varices. The intestinal tract contained fresh, bloody, soft material throughout the lumen.

Comment

In this patient, massive bleeding into the gastrointestinal tract originated from a hemorrhagic cholecystitis and not from esophageal varices as was expected from the history of alcoholism and liver disease. Unlike several other patients with hemor-

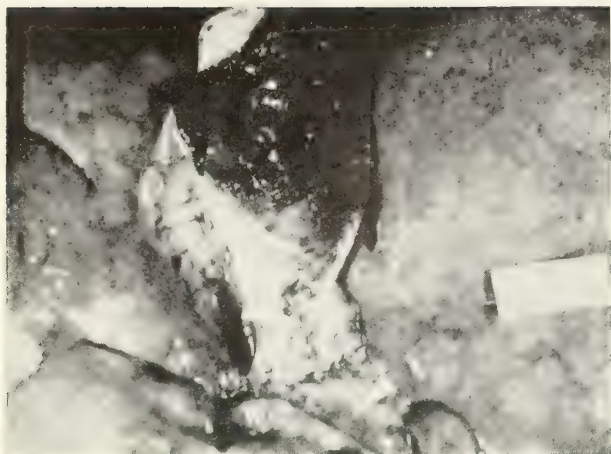


Figure 2

Gross photograph of opened gallbladder attached to the liver. The common bile duct (upper arrow) and cystic duct (lower arrow) were filled with blood, but were histologically normal. The gallbladder was also filled with blood and stones. Prior to this photograph, the contents of the gallbladder were removed to show the shaggy hemorrhagic mucosal surface.

rhagic cholecystitis, a palpable gallbladder was not felt on physical examination and at autopsy the gallbladder was of normal size. The gallbladder may have been intermittently enlarged, however, as suggested by the initial gastrointestinal films with the extrinsic pressure defect in the second part of the duodenum. Fitzpatrick noted the same radiological sign in another patient with hemorrhagic cholecystitis.¹³

Although most upper gastrointestinal bleeding arises in the esophagus, stomach or duodenum, it is well to keep in mind the possibility of hemobilia when diagnostic studies of these regions are negative. When hemorrhage occurs, it can remain confined to the gallbladder, run out through the ducts into the duodenum causing hematemesis or melena, clot in the bile ducts causing jaundice or build up enough pressure in the gallbladder to rupture into the peritoneal cavity. Physical signs will vary accordingly. The importance of making the diagnosis is obvious since hemorrhagic cholecystitis is easily correctible by cholecystectomy.

Summary

A case report of hemorrhagic cholecystitis in a patient with alcoholic cirrhosis has been presented.

Hemobilia caused by bleeding from hemorrhagic cholecystitis is a rare cause of massive hemorrhage from the upper intestinal tract. The classical syndrome consists of biliary colic, jaundice, hema-



Figure 3

Low power photomicrograph of a cross section of the gallbladder. Lumen is at the top. The dark material in the upper half of the picture is composed of masses of red blood cells trapped in fibrin. Fragments of necrotic, inflamed, and hemorrhagic mucosa (arrows) lie within and beneath this bloody material. The muscular wall runs across the bottom of the photograph. Hematoxylin and eosin. Approximate magnification 40X.

temesis and melena. An enlarged gallbladder may be palpable or may be seen as a pressure defect on the second part of the duodenum on upper G.I. series.

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Giant Cutaneous Horns

Tibor de Cholnoky, M.D.

Cutaneous horns are weird corneous excrescences of various shapes and sizes. They are most frequently observed in older people, on the face, ears, scalp, extremities, or penis. These horns are formed on elongated papillae of the corium—unlike the horns in animals which are implanted on bone. They originate over seborrheic keratosis, or occasionally over actinic or arsenical keratoses of the skin, preponderantly in man. Their color varies from yellow-brown to black. Wrinkled fissured bark like structures, they usually measure a few millimeters, rarely several centimeters in length and width. Basal or squamous cell carcinoma have been observed in an average of 10 to 15% at its base, which corresponds to our observation in 38 patients where one basal cell and two squamous cell carcinomata were found. Two such unusually large cutaneous horns, and a third one on the nose with malignancy are presented as follows:

Examination revealed, a curved striated horny growth measuring $5\frac{3}{4}$ by 2.6 centimeters in width at its base, surrounded by crusted hyperkeratotic skin. The lesion was widely excised and the defect reconstructed by shifting upward a preauricular skin-flap to obtain a closure, which resulted in primary union. Pathological examination did not reveal any malignant changes at its base. The patient was seen 3 years later without any recurrence.

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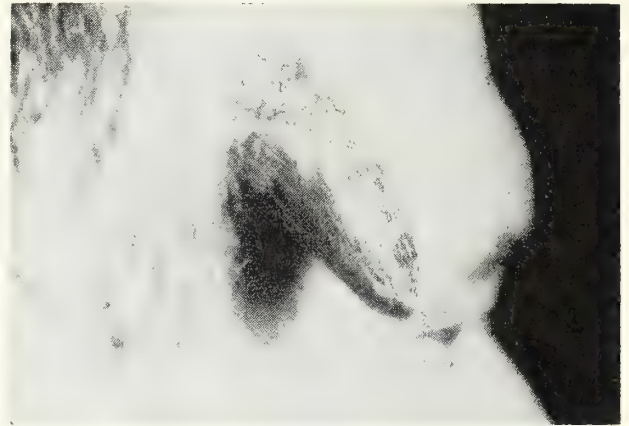


Figure 1

A 52 year old male applied for treatment for a horn on his right temporal region, which had gradually increased to the present size during the past two years. As he stated, it "gave him a bullish appearance" and exposed him to ridicule.

Examination revealed, a curved yellow-brown hard corneous growth with a slight hook at the end measuring 6.3 centimeters in length and 1.9 centimeters in width. The horny growth was removed under local anaesthesia, its base, after curettage, was desiccated with high frequency current until a dry crust was obtained. Healing resulted with a soft pliable scar within three weeks, without any functional disturbance. The pathological report did not reveal any malignancy besides hornified keratosis of the glans. Patient was seen $2\frac{1}{2}$ years later, with no recurrence.

Discussion

These lesions are best treated by excision for proper pathological examination. However, electro-desiccation is occasionally desirable, as in our case on the penis.

Summary

Unusually large cutaneous horns are presented with discussion of treatments.

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Figure 2

A 45 year old male was referred by Dr. V. J. Mulaire with a cutaneous horn on the penis. It started with some induration and scaling at the glans and within three years gradually increased to its present size.

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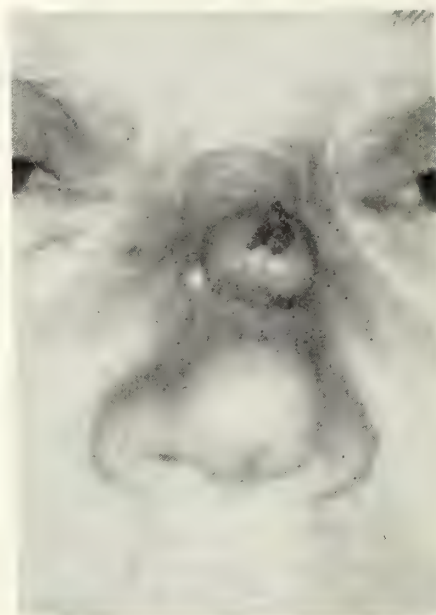


Figure 3

An Italian woman, 57 years of age came for treatment of a cutaneous horn on the nose, which she claimed to have had for over five years and stated that it bled occasionally. The corneous growth measured 1.5×1.4 centimeters in size. This was widely excised and the defect covered with a full thickness skin-graft from behind the left ear. Healing was undisturbed with good cosmetic result. Pathological examination revealed a basal cell carcinoma invading the underlying tissues. This patient was seen five years later with no recurrence of the disease.

Incidence of Diarrhea in the Treatment of Genitourinary Tract Infections with Ampicillin

Trudeau M. Horrax, M.D.

Ampicillin is a semisynthetic penicillin known for its effectiveness against a variety of Gram-positive and Gram-negative organisms capable of causing genitourinary tract infections.¹⁻⁶ While the therapeutic effects of ampicillin are well known and documented, its gastrointestinal side effects are not. A review of the literature shows that gastrointestinal side effects have been mentioned frequently but seldom studied specifically. The single important exception is the study by Fitzpatrick and Topley⁷ in which they gave 30 patients with bacterial genitourinary tract infections 2 Gm. of ampicillin per day for ten days. Stool cultures were examined throughout the study and cases of diarrhea noted. They reported that 18 patients developed marked amounts of *Candida albicans* in feces but only two developed diarrhea. (No definition of diarrhea was given by the authors.)

In our own urologic practice it seemed that a much higher percentage of patients complained of diarrhea, and we were concerned that the drug's absorption might be lowered by increased motility or that antidiarrheal medicine might interfere with absorption. We therefore undertook a study to assess (1) the incidence and severity of ampicillin-induced diarrhea and its effects on therapy, if any; (2) blood levels of ampicillin in patients with diarrhea; and (3) the effect, if any, of kaolin-pectin mixture on ampicillin blood levels.

Materials and Methods

Seventy-five patients with acute bacterial infections of the genitourinary tract, as shown by colony counts of 100,000/ml. or more of urine, were ad-

mitted to the study. Patients excluded from the study were (a) those with a history of sensitivity to any penicillin, (b) those with a gastrointestinal infection, (c) those taking antacids or anticholinergics, (d) patients with known abnormalities of the gastrointestinal tract likely to lead to malabsorption, and (e) pregnant women.

There were 18 men and 57 women, ranging in age from 18 years to 78 years. Of the 75 patients, 36 had mild to moderate infections and 39 had severe infections. Severity was determined by clinical impression. Diagnoses and causative organisms are shown in Tables 1 and 2.

TABLE 1
DIAGNOSIS IN TREATED PATIENTS

Diagnosis	No. of Patients
Cystitis	34
Prostatitis	6
Neurogenic bladder with residual urine (infected)	2
Urethritis	3
Renal Calculus (Staghorn)	2
Epididymitis	4
Asymptomatic urinary tract infection	13
Acute urinary tract infection—post-op urologic surgery	4
Pyelonephritis, acute	3
Genito-Urinary Tract, misc	4
TOTAL	75

TABLE 2
CAUSATIVE ORGANISMS

Organisms	No. of Patients
E. coli	42
Proteus	9
E. coli & Proteus	4
Staph. Albus	6
Others	9
TOTAL	70*

* No culture material available in 5 patients.

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Read at the Annual Meeting of The American Urological Association, New England Section, Whitefield, New Hampshire, 1968.

Before treatment began, patients were questioned to establish how frequent their normal bowel movements were. (For purposes of this study, we had decided that diarrhea would be defined as bowel movements two times or more frequent than the patient's normal daily habit.) Patient records were designed so that they could be divided into 3 groups: those that did not develop diarrhea, those that did develop diarrhea but were not given kaolin-pectin mixture, and those that developed diarrhea and were given kaolin-pectin.

Every second patient who reported diarrhea during the study period was given kaolin-pectin mixture. This was done so that we could compare ampicillin blood concentrations in diarrheal patients who received kaolin-pectin with concentrations in diarrheal patients who did not.

Pretreatment clean-voided urine specimens were obtained for colony counts and ampicillin disc sensitivity testing. Patients with infections caused by ampicillin-resistant organisms were not excluded from the study since some organisms which show resistance in disc sensitivity testing are susceptible to the high concentrations of ampicillin achieved in urine.⁸

All patients were instructed to take one 250 mg. capsule of ampicillin trihydrate* 4 times a day regardless of mealtimes. On the second treatment day, approximately 2 hours after having taken their fourth dose for a total of 1 Gm. of ampicillin, each patient returned to the office and blood samples were drawn; samples were frozen immediately and shipped to a microbiology laboratory for antibiotic bioassay. We asked the patients about any changes in bowel habits and instructed them to call us if diarrhea developed at any time during therapy. The patients were also instructed to continue taking one 250 mg. capsule of ampicillin 4 times a day for the next 5 days and to return to the office 2 hours after their last dose.

* Supplied as Polycillin® capsules by Bristol Laboratories, Division of Bristol-Myers and Co., Syracuse, New York.

When they returned on the seventh day, treatment was evaluated and they were asked about gastrointestinal side effects. The following features were recorded on their records: (1) frequency of bowel action within 24 hour periods; (2) presence or absence of abdominal pain; (3) presence or absence of anal pruritus; (4) any disturbance of their well-being as a result of any of the above. Blood and urine specimens were again taken for post-treatment antibiotic serum concentration assays and colony counts.

Results

Seventy-two of the 75 patients who entered the study returned for follow-up evaluation after 7 days of treatment. Four of the patients experienced an increase in bowel movements from their usual one daily to two. Four others reported frank diarrhea. The remaining 64 patients had no significant change in bowel habits, although some patients reported having softer stools than usual. Thus, 8 of 72 patients, or 11 percent, experienced diarrhea within the definition of bowel movements increasing two or more times over normal. Slightly more than 5 percent experienced frank diarrhea. The patients' comments about the severity of diarrhea are summarized in Table 3.

Ampicillin blood levels in all patients were adequate to treat the conditions diagnosed. Ranges of blood levels on the second and seventh days of treatment are shown in Table 4. The occasional low concentrations found were probably due to the patients delaying more than two hours after their

TABLE 4
RANGES OF AMPICILLIN SERUM LEVELS
(mcg./ml.)

	Day 2 Range	Day 7 Range
Patients without Diarrhea	<0.03-4.4	<0.03-2.9
Patients with Diarrhea	0.2-1.9	<0.03-1.4

TABLE 3
ASPECTS OF DIARRHEA IN THE EIGHT PATIENTS WHO REPORTED BOWEL MOVEMENTS
TWO OR MORE TIMES MORE FREQUENT THAN NORMAL

	No. of bowel movements in 24 hrs.		Bowel pain		Anal pruritus		Patients upset about diarrhea on day seven	
	2-4	5-8	present	absent	present	absent	Yes	No
No. of patients	5	3	0	8	3	5	1	7

last previous dose before reporting for blood samples to be drawn; each patient had at least one sample which showed a therapeutic level.

During the 7 days of treatment four patients reported diarrhea severe enough to warrant the use of kaolin-pectin. Since only half of these patients were given kaolin-pectin, in accordance with our study design, we did not obtain enough data to draw any conclusions about the possible effects of this mixture on ampicillin therapy. Blood levels on the two patients who did get kaolin-pectin ranged from 0.2 mcg./ml. to 1.9 mcg./ml., within the range of concentrations found in the other patients.

Clinically, 70 of the 72 patients, or 97 percent, were either cured or improved. (See Table 5.) While this seems to be a high success rate for genitourinary tract infections, it should be remembered that most of these were acute uncomplicated infections. Bacteriologic results, summarized in Table 6, reflect the clinical results. Of the 62 patients in whom

bacteriologic results could be assessed, 46 had normal flora restored at the end of 7 days' therapy. In 5 cases no material was available for culture; these were 4 cases of epididymitis and one case of post-operative urethritis without discharge. In another 5 cases patients were not available for specimen culturing.

Discussion

In this study the incidence of diarrhea which complicated therapy was low, and when it did develop, it seemed mild and not distressing to the patients. Patients who experienced diarrhea reported that they noticed some looseness of stool about two days after the start of therapy. The diarrhea usually did not become worse, however, but subsided spontaneously even though the patient continued the medication.

Using what we felt the minimum curative dose would be in these infections, the incidence of diarrhea was at least as high and often higher than in many studies where 500 mg. q.i.d. had been used. Our study methods, which were set up specifically to record diarrhea, were probably responsible for finding the higher incidence. At the outset, however, we had expected a higher incidence of diarrhea; the number of patients complaining of diarrhea in the ordinary course of practice had led us to expect a figure as high as 50 percent. In view of the low incidence found in this study, we believe many patients must use the term diarrhea to report any increase in frequency of bowel movements or changes in stool consistency.

TABLE 5
CLINICAL RESPONSE TO SEVEN DAYS OF THERAPY WITH
AMPICILLIN TRIHYDRATE 250 M.G. Q.I.D. AMONG ALL PATIENTS

Results	No. of Patients
Cured	56
Improved	14
Failure	2
TOTAL	72-97%
(Lost to follow-up)	(3)

Comment: One patient who failed had neurogenic bladder with residual urine and ampicillin-resistant aerobacter. The other had an *E. coli* urinary infection.

TABLE 6
BACTERIOLOGIC RESPONSE TO SEVEN DAYS OF THERAPY WITH AMPICILLIN TRIHYDRATE
250 MG. Q.I.D. AMONG ALL PATIENTS

	Patients without Diarrhea		Patients with Diarrhea		Total	
	Number	%	Number	%	Number	%
Normal Flora Restored	41	64	5	63	46	64
Carrier State of Original Pathogen	1	2	—	—	1	1
Persisting Infection	4	6	1	13	5	7
Superinfection	6	9	—	—	6	8
Resistant Organism	3	5	1	13	4	6
Post-therapy Culture						
Not Available	9	14	1	13	10	14
TOTAL	64	100%	8	100%	72	100%
(Lost to follow-up)	(3)				(3)	

Summary

The incidence of diarrhea (bowel movements at least twice as frequent as normal) in 72 adults treated with 250 mg. of ampicillin trihydrate 4 times daily for 7 days was found to be 11 percent. Frank diarrhea of clinical significance occurred in only 5 percent of the patients. The severity of the diarrhea was usually low when it did occur and usually subsided spontaneously even though medication was continued. All patients had ampicillin blood levels considered therapeutic for genitourinary tract infections. Clinical and bacteriologic evaluation showed the cured-improved rate to be high in spite of the minimum dosage used. Diarrhea may be reported more frequently by patients due to their imprecise use of the term for various changes in bowel function or stool consistency.

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Correctable Complications Of Neoplastic Disease: II. Meningeal Leukemia

Roland T. Skeel, M.D.

Meningeal leukemia (ML), a syndrome resulting from the infiltration of the leptomeninges with leukemic cells occurs in up to 50% of patients with acute lymphocytic leukemia (ALL) and in a smaller percent of those with acute granulocytic leukemia or blastic transformation of chronic granulocytic leukemia. It is important to recognize in its early stages because it is readily treated with chemotherapy and/or radiotherapy and, if untreated, it leads to coma and death. The frequent occurrence of ML during bone marrow remission has been of particular interest to chemotherapists, since this suggests that leukemic cells in the meninges are protected from systemic chemotherapy which might

otherwise result in cell kill and potential cure. The elimination of all possible leukemic cells from the meninges has thus been a goal of many comprehensive treatment programs for ALL which strive to increase the number of long term remissions and survivals.

Patients presenting with ML have a wide variety of signs and symptoms ranging from mild headache with no physical signs to convulsions with papilledema and cranial nerve palsies. Table 1 lists the frequency of the various manifestations described in several reports.¹⁻⁵ Since such signs and symptoms may be seen without ML, lumbar puncture must be done to look for leukemic cells in the cerebrospinal fluid (CSF). It is important to do both a cell count and to examine the morphology of the cell sediment on a Wright's stained cover slip preparation.⁶ If there are 5 or more cells/mm³ of CSF and any leukemic cells are seen on the coverslip, the diagnosis of ML can be made and treatment should be given.

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TABLE 1
MAJOR SIGNS AND SYMPTOMS OF MENINGEAL LEUKEMIA

<i>Author</i>	<i>None</i>	<i>Irritability and Lethargy</i>	<i>Headache</i>	<i>Nausea and Vomiting</i>	<i>Seizures</i>	<i>Papilledema</i>	<i>Cranial Nerve Palsy</i>
Shaw ¹	0	88	56	92	56	64	50
Nies ²	37	28	16	13	8	18	14
Hardisty ³	—	—	70	80	8	70	16
Hyman ⁴	—	40	45	85	7	60	—
Sullivan ⁵	—	42	63	60	—	43	28

Millipore filter cytology and cyto-centrifugation have also been used to look for leukemic cells in the CSF, but these require specialized equipment and skills for interpretation and thus are less adaptable to routine use. Although the CSF protein may be elevated and the glucose reduced, these findings are inconstant and occur primarily in relation to very high cell counts.

ML is highly susceptible to treatment with intrathecal methotrexate (MTX). It is given a dose of 12-15 mg/m² (0.3-0.4 mg/kg) I.T. q 4 days until the spinal fluid is cleared of leukemic cells. This usually requires 3 to 5 treatments. If the MTX is mixed with saline to give a concentration of 2 mg/cc., the volume injected will be sufficiently large to insure adequate mixing and distribution of MTX throughout the CSF. Treatment with MTX has several potential side effects. Bone marrow suppression can occur in patients whose marrow function is already compromised. Since the drug is slowly released into the blood stream from the CSF, the risk of marrow suppression is equal or greater than when the drug is given systemically. The systemic effect may be counteracted by giving leucovorin 3 mg. I.M. q 6h $\times$ 6 doses, beginning at the time of the I.T. injection. Convulsions occasionally occur several days after the first I.T. injection and are of unknown origin. They appear to be different from the con-

vulsions occasionally seen with severe ML. and increased hydrostatic pressure. Spinal radiculitis is a rare complication, probably related to local nerve root irritation. Although one would suspect that brain stem herniation would be a concern in a syndrome with frequent elevation of CSF pressure, this is in fact rare and papilledema is not a contraindication to lumbar puncture in suspected ML.

Alternative modes of therapy are radiotherapy (1000 rads given over 10 days to the brain and spinal cord) and intrathecal cytosine arabinoside (25 mg/m²q4d). Neither alternative is superior to MTX and both are usually reserved for patients whose ML appears refractory to further MTX therapy.

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Editorials

Basic Science And Practical Medicine: Research On Cancer

In 1949 cancer researchers said "give us the money and in 10 years we will give you a penicillin for cancer." In 1970 after 2 billion had been spent searching for the elusive cure the researchers are saying give science the money and eventually there will be control, if not the conquest of cancer. Now President Nixon in his message to Congress proposed as a major objective for American Science a 300 million program to produce a cure for cancer. Apparently, we are thinking with the mentality of the Manhattan project and the moon landing. In the former, a technical development remained to be done once the atom was split. In the latter no new ideas were required, only highly sophisticated technological development. In cancer the key has not yet been devised and a crash program is impossible. Only basic research will open the door and it is in this area that researchers in cancer must work.

Apart from simple therapeutic agents like l-asparaginase from which clinical and theoretical spinoff is not yet complete and from ongoing studies which are already heavily funded, three main fields could easily yield a crop which would be at worst constructive, and at best clinically applicable within 5-10 years: immunology, molecular biology, including virology and the study of transformation in clones. It is possible that immunology may well offer the best approach to the prevention and control of malignancy in the

long term by way of understanding of the body's immuno surveillance mechanism.

Molecular biology has already turned up the important discovery of reverse transcriptions which copy RNA into DNA. Transformation in clones is engaged in uncovering the surface differences between transformed malignant clones, unsusceptible to contact inhibition and "normal" somatic cells. Anyone in these areas or all three in convergence would be worth pursuing. Such an approach would be a great improvement on mass screening of chemicals at random often by unsuitable tests for "anti-tumor" activity as was discovered by the National Cancer Institute about ten years ago. Hundreds of chemicals were tested on microbes, animals, and humans, but after more than \$100 million had been spent the cure was nowhere in sight.

Rather than some exclusive concentration on cancer, perhaps concentrating more in tandem on the life cycle of which cancer is a part may represent a thrust at bigger game, both scientific and psychological. It is not without significance that all three disciplines which look most likely to profit cancer research, immunology, molecular biology including "error theory" and the nature of mortality in clones are deeply involved in attempts to elucidate the nature of the information loss with age. In fact, the total cures of all cancers while removing a cloud from the horizon of older people as well as ending the tragedy of cancer in the young or middle-aged, will add only about 1-5 years to the expectation of life at 65. Older Americans will die almost as soon of something else, chiefly degenerative diseases.

THE COVER

JAMES LIND: CONQUEROR OF SCURVY

SURGEON of Britain's Royal Navy aboard H. M. S. *Salisbury*, in the English channel in 1747, James Lind conducted a series of clinical experiments that definitely proved citrus fruits or their juices would cure scurvy, dread dietary-deficiency disease that killed a million seamen between 1600 and 1800. Dr. Lind's work, at sea, in Edinburgh, and at Haslar Naval Hospital, plus his three books, on scurvy, on care of sailors' health, and on tropical diseases, had much to do with reforming naval health practices, saving lives both on sea and land, and shaping destinies of nations.

Cancer, in fact whether its origin is viral, mutational, or other, is almost certainly a special case of the wider process of mis-specification which appears to be involved in our deterioration with age. It might just be possible to control cancers without controlling aging. It would not be possible to control aging without controlling cancer. The philosophy behind an extension of cancer effort to senescence is that both aging and liability to tumors seem to be readily studied in animals by the same reasonably simple means. Should current threads leading to the cancer cure prove larger than expected postponement of age changes would at least put off tumors that cannot be prevented or cured. At that, biologically speaking, it ought to be far easier to alter a rate than to rewrite a program.

In fact, most of the experiments and facilities needed for one project, a test-battery to measure aging rate, for example, are also needed for the other. By widening the underlying objective, we could have two renowned and humane achievements for the price of one. Without some control of the degenerations, which though less feared are in many ways crueller destroyers of the quality of life than are the malignancies. The victory over cancer could be a hollow one, transferring yet another burden to already overloaded palliative services in the old.

What we are advocating is broadening the objective of the cure for cancer to involve much else in science. Cancer will give way to science when the total level of knowledge in biology, chemistry, aging, plus the development of the technology is sufficient. No one knows what those levels should be. In other words, solution to the cancer puzzle may not depend on how much is spent directly on the disease, but on how much is spent across the board in all fields of science. Penicillin was not discovered in a crash program to cure infections. The cure for cancer will probably also not come from a crash program but from pursuit of knowledge in basic science. It is basic science that leads to practical medicine.—L.H.N.

Prison Medicine:

The Key To Prison Reform

What is it that society wishes to do with its criminals? Does it basically wish to punish them or rehabilitate them. It has not made up its mind. Neither has it decided whether punish-

ment or treatment are mutually incompatible. In the meanwhile, the task of the prison doctor is a thankless one simply because of society's vacillation. Scott, in a recent paper in the *British Medical Journal* takes a fairly balanced view of the problem. He describes the case of a teen-aged girl in Holloway Jail who climbed onto the roof and began loudly making various kinds of statements from this vantage point. When she was recaptured, hospital treatment was advised. Apparently, someone thought she was mentally ill. But the interest of discipline however led first to a 30 day sentence in solitary confinement, a rather old fashioned way to deal with the mentally disturbed. Treatment says Scott is not a passive process applied by a doctor. Rather it is a cooperative venture designed to change a person into a desired direction. At times in accordance with what we know of learning thorough treatment might require some form of rationally applied punishment.

Treatment and punishment are not mutually exclusive and at times can be combined quite logically. We need, however, always be on guard that punishment is not just being applied to relieve the feelings of outraged onlookers or to make life easier for the latter. One factor that sometimes interferes with a rational approach is our habit of labeling persons as "delinquent" "mentally ill" or "personality disorder" and then acting as if the label settled the question of whether the person is ill or not and indicated the appropriate course of action. Giving a name to a disorder does not help the unfortunate patient any more than giving a long latin name to a skin lesion.

Obviously, before a disturbed person can be treated he must be controlled and an appropriate institution for the exercise of control must be chosen. We are fortunate in having available institutions in which the personnel are prepared to cope with aggression and skilled in differential diagnosis and treatment of its manifestations. They know how to distinguish between the panic of the frightened and inadequate, the violent crises of the depressed and frustrated, the outbursts of the psychotic or brain-damaged and the planned violence of the habitually anti-social. They can usually decide who needs to be removed to a hospital, who needs to be segregated for his own protection and who must be quickly and firmly locked up.

It is not so much a question of replacing

restraint with treatment as applying it as one stage of treatment. Scott gives a few rules for applying restraint within the total program of an institution and realizes the inevitability of being unsure at times whether certain individuals need prison or hospital as their lodging. There certainly must not be a contrast between the warm protective atmosphere we strive for in a hospital and the nasty unpleasant atmosphere of a prison of which so many of us secretly approve although we have no idea as to what is being done to the inmates.

For example, many have a feeling for France as a civilized state. How disturbing then is it to read an account of the situation in French jails which was published in *Concours Medical* 92, 4691, 1970. Participants in a panel discussion point out that in theory the prison physician ought to be an integral part of the system. Alas, the reality is different and the French prison doctor sometimes feels that he also has been condemned by society. There seems to be two basic obstacles to effective medical activity, lack of money and an unbelievable complex system of regulations. Until recently the state allowed 25 cents a day per prisoner for all purposes including medical treatment.

Dental treatment is considered as a luxury for which no funds are available and the prisoner therefore is in the hands of a young dentist giving his services for the sake of the practice. The edentulous mouth is almost a hallmark of the persistent offender. In addition, there are a number of ridiculous regulations designed to prevent escape and deceit. Thus prisoners may have their drugs only twice a day once in the A.M., and once at 5 P.M. and they must be given them in water taken at once.

The doctor is regarded with some suspicion both by criminals who see him as an agent of the establishment and other personnel who see him as an irresponsible outsider making excuses for the prisoners. One quarter of all prisoners consult the doctor each week partly because they were sick from their sentence partly because of the awful environment in which they live and the regression to an infantile state which it engenders in them.

There are signs, however, that the 20th century is breaking in—even in French prisons. A diploma for prison doctors including a good deal of psychology has been instituted in Paris and some prisons have begun group psychotherapy.

Prison doctors have by their persistence and their example begun to make a dent in the regulations and conditions of prison life. All the participants in the panel discussion agreed it is high time that the prison in modern society is a completely out of date tool for dealing with crime. The rate of recidivism of 70 to 80 per cent shows how little prison does to rehabilitate. Indeed a French prison aggravates delinquency, a characteristic which is no doubt true of prisons elsewhere, with the possible exception of Tanzania.

If prisons are useless, what is the alternative. We do not know as yet, but at least some doctors are asking questions and seeking a scientific approach to the rehabilitation of the criminal. At least some have appreciated that there are not two worlds, that of the normal, and the world of the criminal. In time, society will also appreciate that the decision to punish or to treat are not mutually exclusive. We may accept the fact that there will always be mentally sick people, that many will end up in prison. Here rehabilitation should be the goal. For this the prison medical service needs to be upgraded. Medicine should be the key to prison reform.—L.H.N.

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The Rest Dogma In Treatment of Rheumatoid Arthritis

The value of bed rest in the treatment of rheumatoid arthritis has been controversial. In 1963 Partridge and Duthie³ investigated the effect on patients with rheumatoid arthritis of complete immobilization for 4 weeks in plaster casts. They compared this method with that of a control group that were treated with bed rest and simple splinting over a subsequent 12 weeks period. No adverse effects were found nor were any serious complications encountered. They stated that rheumatoid arthritis tended to diminish more in the splintered group and that relief of pain occurred sooner. Since then the complete or major bed rest during periods of active polyarthritis remained a major element in the treatment recommendations of many rheumatologists.

We all know, however, that bed rest is difficult to maintain except in a hospital and is usually resisted by patients who consider their joint mobility already threatened. It is also costly in terms of both nursing services required and time lost from the patient's usual occupation. Opposition to the use of bed rest as a therapeutic measure is also based on the belief that it leads to muscle atrophy and contracture as well as joint stiffness, osteoporosis and secondary complications, such as phlebothrombosis. It has accordingly come to be widely thought that to rest more than a patient would of his own volition carries no specific benefit.

Thus far then, the value of bed rest in the treatment of rheumatoid arthritis has been clearly controversial. Mills, et al¹ have just described the results of a study designed to evaluate the effect of bed rest on the manifestations of rheumatoid arthritis in patients admitted to the hospital for treatment of this disease. Patients were randomly assigned to a rest or activity program for a period of 10 weeks and were evaluated by physicians who did not know which treatment the patients were receiving. Forty-two patients were studied with grip strength, sedimentation rate, walking time, ring size and number of tender joints. In neither the rest nor activity group did the number of swollen joints diminish. The time required to climb and descend a flight of stairs and ability to get out of a standard chair showed the same and minor degrees of improvement in both rest and activity treatment groups.

The programs in the hospital were clearly different from that in the rest group in the time spent at bed rest. Most physicians who advocate rest in the treatment of rheumatoid arthritis emphasize the importance of bed rest and make little distinction between different kinds of activity as far as their effects on the disease are concerned. If this is so the study protocol in Mills, group should have provided a good test of the therapeutic effect of bed rest.

The overall results of the study gives no evidence of the superiority of either treatment program. The striking finding is that although a half or more of the patients of both groups improved, the degree of improvement was not marked in most cases. The majority of the measurements made showed only inconsequential changes in either rest or active groups. In fact more patients in the activity than in the rest

group showed improvement in grip strength, walking time, and joint range of motion. However, a tendency among the few to deteriorate more on the activity program balanced the total net change in the two groups. This tendency of the activity group to show more change in both directions during the study period needs further investigation, since it may well be that activity can help some patients and retard others. It is important to establish the criteria for making this distinction.

The finding that most patients improved in some degree during their hospital course may be due to the fact that all patients received daily physical and regular salicylate therapy, Isolation from some of the usual physical and emotional stresses of living may also have been involved. Since all patients were undoubtedly less active physically than they might have been if not hospitalized, the possibility that some benefit to both groups was obtained from rest cannot be denied. On the other hand, the value of bed rest quantitatively could not be demonstrated. It is also possible that the relatively minor changes noted reflected the natural tendency of the disease to improve after periods of exacerbation.

If Mills, downgrading of bed rest in rheumatoid arthritis can be confirmed, it will be one more of the many diseases in which the rest dogma has been overturned.—L.H.N.

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Natural and Human Factors Releasing Mercury to the Environment

Man's use of mercury has threatened bird populations in Sweden and contaminated lakes and rivers in some areas of this country to the point that fish from them are unsafe to eat. Existing deposits of mercury in inland waterways constitute a continuing source, through the

action of microorganisms in the bottom mud of the more toxic methylmercury. In the oceans, however, mercury comes apparently largely from natural sources. Scientists are now working to understand the geochemistry and biochemistry of mercury. Much, however, remains to be learned about its distribution, its conversion from one form to another and its transport on a global basis.

Medically it is known that metallic and inorganic mercury compounds usually attack the liver and kidney, but in ordinary exposures they do not remain in the body long enough to accumulate to serious levels. Organic mercury compounds such as the methyl form are much more dangerous since they attack the central nervous system, and remain in the body for longer periods of time. Studies with radioactive methylmercury has established that it is retained in the human body with a half-life of about 70 days, so that toxic amounts can accumulate even with low dose rates.

Widespread incidents of methylmercury poisoning have been reported only in recent decades. In Japan it comes from contaminated fish and in many countries from eating seed grain that had been treated with mercury compounds and eating pork that had been fed such contaminated seed grains. When brain symptoms occur they are usually permanent. Brain damage has even been reported in infants born to mothers who were exposed to methylmercury during pregnancy and were themselves not affected. It was then recognized in Sweden that methylmercury in the r.b.c. of the fetus are 30 percent higher on the average than in those of the mother.

There is still some uncertainty as to what constitutes lethal concentrations of methylmercury in man, since there must be individual differences in tolerance. The lowest concentration in the blood which is reported to cause identifiable symptoms is 0.2 ppm. This level is associated with a steady daily intake of 0.3 mg methylmercury for a 70 kg man. People actually must keep dosages lower by a factor of 10 below this figure and to do this they may only eat fish weekly containing 0.5 ppm of mercury. Such guidelines implies a severe restriction to persons in contaminated areas for whom through preference or necessity fish are normally a large part of the diet.

Mercury is a scarce element yet it occurs

widely in nature, readily forms a variety of organic and inorganic compounds. Most rocks and soils contain mercury in very low concentrations, 100 ppb or less. Shales rich in organic material show higher concentrations up to 10,000 ppb and very low concentrations are reported in coal and marine phosphates. Mercury is also found in the atmosphere up to 16 ppb near ore deposits although much less in air generally. Surface waters contain generally less than 0.1 ppb. No-one knows yet whether sea water contains mostly methyl or inorganic mercury compounds.

It seems clear that mercury is readily exchanged among air, land and water. It enters the atmosphere in both particulate and vapor form and is deposited in the earth's surface by rainfall and dry fallout. Water runoff from land washes mercury into the waterways. Once methylmercury is formed it is more readily taken up and retained by living organisms. This conversion is apparently responsible for the high levels of mercury found in the aquatic food chains. Methylation of mercury is caused by microorganisms mostly under aerobic circumstances but may also occur anerobically and in intestines of animals particularly chickens.

Most of the mercury found in animal tissues is methylmercury and is concentrated in animals through the food chain as well as direct absorption. In marine diatoms most of the mercury accumulates on the cell surface by adsorption, whereas fish can concentrate methylmercury through their food and directly through their gills so that their flesh contains concentrations several thousand times higher than is present in the surrounding water. In one experiment trout exposed for an hour a day to 0.1 ppm concentrations of methylmercury showed muscle concentrations of 4 ppm after 10 days.

Large marine animals have also been reported to contain unusually high concentrations of methylmercury. Both swordfish and tuna have been reported to contain as much as 1 ppm methylmercury and seals and whales apparently contain more. However, concentrations in samples taken from a given species may vary and the FDA reports that only a few tuna have concentrations in excess of 0.5 ppm, the legal limit.

The largest uses of mercury by man are for the electrolytic production of chlorine and caustic soda and for the manufacture of electrical equipment and antifouling paint. Substantial

amounts are also consumed in agriculture as pesticides and seed treatment. Mercury is also released to the environment in the combustion of coal and petroleum products. A rough estimate is that 5,000 tons of mercury per year is released to the air from fossil fuels which is about equal to estimates of the natural yearly runoff from streams and rivers. Whether the mercury comes from man's activity or natural sources the health hazard from too much contaminated fish is the same.

Many puzzles remain to be solved before the natural cycles of mercury in the environment and man's contribution to those cycles can be completely sorted out. If mercury in the oceans is largely of natural origin as it seems to be, then how does methylation take place in the sea? Is it in sea bottom sediments? Can the many inland waterways with existing deposits of mercury be rendered harmless? Remedial measures for agricultural uses of mercury are easier. In the 4 years since Sweden banned seed coatings and pesticidal uses of methylmercury bird populations have begun to recover and the amount of mercury in many types of food have decreased.

Man's use of mercury needs to be especially cautious because unlike some other pollutants, the difference between tolerable natural background levels in the environment and levels harmful to man and animals is very small and this may turn out to be true for other heavy metals also.—L.H.N.

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Practical Suggestions In Rubella Immunization

Rubella is clinically a much milder disease in children than in adults. Joint problems are distinctly uncommon in children but occur frequently in adults. Usually brief and mild joint symptoms occur but occasionally they can be severe and prolonged. The duck embryo rubella vaccine has caused a few untoward reactions in children, but has been found to cause joint problems in a substantial proportion of susceptible adult recipients. Rubella virus has been recovered from synovial fluid in one case of natural rubella and in one case after duck embryo vaccine.¹

Attenuated rubella virus vaccine in a single dose will protect against the natural disease. Antibodies to the rubella vaccine have continued at a fairly constant level over at least four years and remained parallel although at a lower level to the antibodies resulting from natural rubella. It is interesting that large numbers of susceptible contacts including susceptible mothers exposed to their vaccinated children excreting attenuated virus have shown no evidence of contact infection by serologic studies. Because the chain of natural rubella contact infection of susceptible pregnant mothers is from rubella in school children, the recommendation of the committee to immunize children from 1 year to puberty appropriately attacks this chain of infection at its most vulnerable link.

The epidemiologic pattern in community life is such that outbreaks occur at approximate intervals of 6-9 years leaving in their wake up to 15-20 per cent susceptible. This typical epidemiologic pattern lends greater confidence to the

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attack on control of rubella through childhood immunization. Since approximately 20 per cent of adult women remain susceptible it has been suggested that susceptible adult women should be vaccinated rather than the children. However, although the threat is probably less than from natural rubella, the vaccine virus after vaccination apparently does cross the placental barrier and poses a threat to the fetus during the first trimester of pregnancy in much the same manner as the natural virus.

In support of this view, it has become increasingly obvious from experience that susceptible adult women in the fertile range should not routinely receive attenuated rubella virus vaccine because in many cases susceptibles have been vaccinated with the live virus when they were unaware of their pregnancy which is the time of greatest threat to the fetus. In many such cases abortions have been requested and performed. Also such routine use might expose physicians to the possibility of extensive litigation. Thus the danger of routine use in adult women is unwise.

There are specific instances when the attenuated vaccine may be of value: when serologic tests demonstrate susceptibility, when absence of initial pregnancy and continued non-pregnancy for 3 months if there has not been an outbreak of natural rubella or shortly after parturition when the newborn could also be vaccinated. Lerman's studies confirm the well known hazards, however, of the rubella vaccine in adolescents and young women, which results in arthritis in one third or more of such persons and on occasion producing long continued arthritic symptoms. This is an additional reason for avoiding routine vaccination of adult women. This hazard, however is far less for attenuated virus when used for vaccination before puberty. Nevertheless, different vaccines show considerable differences in their post-vaccinal effect.

The question has been raised as to whether the rubella virus from an outbreak of natural rubella can cause an excretion of sufficient virus to re-infect a vaccinated person to be dangerous for the exposed pregnant susceptible. Careful studies of such exposure to vaccines to natural rubella outbreaks have shown excretion of low frequency and in small amounts. The only quantitative study reported² showed the amount of natural virus excreted by the vaccine to be about 1/100 the amount excreted by a naturally infected susceptible. The same study also showed

that viremia could not be detected in six exposed vaccinees. This pattern indicates a low probability of contagion.

The question also has been raised as to whether a natural rubella outbreak would endanger an early pregnancy in a previously vaccinated mother. This could be a danger from the very rare occurrence of vaccine failure. Stokes points out that this danger may be even less than supposed since it has been shown that even in apparent vaccination failures when antibodies are not measureable after vaccination, protection against rubella may still be present.

The states that have been conducting extensive campaigns of rubella vaccination have achieved marked reduction in rates of rubella in comparison with states lacking such campaigns. If considerable number of susceptible children remain unvaccinated, then Stokes recommends in the event of an adjacent outbreak of natural disease, that a female vaccinee should receive an additional injection of attenuated rubella virus vaccine at puberty. This emergency measure in the face of epidemic rubella could also be carried out in those women who although vaccinated in childhood, show a marked diminution or absence of antibody. Adequate campaigns during the childhood period should, however, control and eliminate outbreaks sufficient to make such revaccination unnecessary.

No adequate alternative exists to the presently recommended effort to wipe out in so far as possible the rubella reservoir in children for the purpose of protecting against fetal crippling. There may be rare instances of failure of immunization as well as unusual instances of susceptibility, but this should not alter the pursuit of successful vaccination already well demonstrated.—L.H.N.

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Surgical Treatment Of Intractable Angina Pectoris

We are now entering an era in attempts at cure of coronary heart disease with angina pectoris. It is not that the thought of relief of

angina pectoris by surgery is new. In 1899 Francois Franck, a physiologist suggested severing the sympathetic fibers to the heart since they carried the pain impulses. What has happened is that by the technique of coronary arteriography it is possible to establish where the blocks in the coronary arteries occur and whether the post stenotic circulation is normal. We also are now able to anastomose a venous bypass graft from the aorta to the post stenotic region and restore sufficient blood flow to the myocardium in suitable patients.

The most advanced lesions and sites of stenosis and occlusion are most often located in the proximal third or half of the coronary arteries. The data thus indicate that the frequency and severity of occlusions are greatest in the anterior descending coronary artery followed in order by the right coronary artery, the left circumflex, the left main artery and least of all the right posterior descending coronary artery. It is upon the fundamental anatomic and pathologic observations that direct surgical procedures designed to augment coronary arterial blood flow are based.

In 1957 Bailey introduced coronary arteriectomy, but even with its modification by Longmire¹⁰ the following method though useful was too restricted in its application even though a number of successful results are recorded. But now considerable enthusiasm is justifiably given to extended treatment of severe CAD by a new surgical approach. To Johnson et al credit is due for placing emphasis on the basic principle that coronary arteries of extremely small caliber may be successfully anastomosed to a venous autograft from the aorta. Coronary arteries with a diameter as small as 1 mm may be joined by suture anastomosis with prolonged patency as confirmed by post-operative arteriography.

The technique of venous graft anastomosis to the coronary artery is of recent origin but already preliminary intra-operative and post-operative physiologic studies have shown that small grafts are functional and suggest the ability of the coronary circulations distal to an obstruction to function in a reasonably normal manner. These document that a venous by-pass graft can transport a significant quantity of blood to the myocardium.

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*U.S. PATENT NO. 2,895,877

ultimate patency of the graft are of obvious importance. The mortality has continued to diminish and in most cases of the leading series it is now 10 per cent or less. The beneficial effects including the response to anginal pain of cardiac performance under both normal and stressful situations and ultimately the influence on the natural history of the disease of recurrent infarction are of prime importance. In an early follow up of Sabiston's series a patency of 90 per cent in post-operative arteriograms occurred. Careful review of symptoms indicates that 65 per cent of the patients are completely free of angina and the condition of an additional 25 per cent are significantly improved while the remaining 10 per cent experienced no changes.

Since advent of aortic coronary bypass grafts several important features in the conduct of the operative procedures have become apparent. There is need for an exacting technique with anastomosis being accomplished with very fine sutures. Some find very helpful the magnification provided by special glasses. The heart must be kept quiet to allow an ideal anastomosis to be performed and asystole or ventricular fibrillation is preferred while coronary arteries of minimal diameter can be anastomosed successfully. Whenever possible it is important that the vessel at the site of anastomosis be essentially normal and not involved with atherosclerosis. Thus far venous autografts are most satisfactory. An internal mammary artery may at times be preferable to a venous autograft.

The indications for operation are not firmly agreed upon. A primary requisite is an established diagnosis of coronary artery occlusion by selective arteriography, and of course there should be distal patency in one or more arterial vessels at the time of arteriography. At present the chief indication for the operation is uncontrolled angina. However, in the future it is possible that not only patients with uncontrolled angina will be candidates for aorto coronary grafts but also those with recurrent myocardial infarction and those with acute infarction and shock may be helped by direct surgery.

The presence of extensive CAD significantly alters cardiac performance even though the patient has only angina. If aorto coronary grafts can be demonstrated to improve cardiac behavior in an objective assessment, the procedure might be indicated both for improvement of demonstrable abnormalities in cardiac functions

and as an aid in the prophylaxis of subsequent infarction. It is already recognized that valvular lesions accompanying coronary artery insufficiency may require correction at the time of myocardial revascularization.

What we do not yet know, since the procedure is so new, are ultimate patency rates of the grafts and whether they are likely to develop involvement by atherosclerosis. Can the grafts develop aneurysmal dilatation, thrombosis and fibrosis? How much blood will flow through the graft in the passage of time and will the procedure extend the life span?

Answers to such questions are as yet unavailable and obviously will come only when both time and appropriate postoperative evaluations permit. For the present there seems to be sufficient clinical and laboratory data of an objective character to warrant continued and perhaps more widespread use of this approach in patients with myocardial ischemia.—L.H.N.

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When To Operate On Rheumatic Mitral Valve

Surgical treatment of rheumatic disease of the mitral valve consists of two types. One is designed to relieve mitral obstruction by the closed heart technique. The other is replacement of the damaged valve with a prosthesis of either the ball valve or disc type. It is the low risk of operation and the relative freedom from recurrent complications that justify recommending valvulotomy to patients with few if any symptoms. Even when symptoms are not troublesome the need to prevent life threatening complications such as fatal pulmonary edema, permanent damage to the lungs and embolism also enter into the recommendation for surgery.

Clinical suspicions for valvulotomy are based upon the presence of a full length mitral diastolic murmur from an opening snap to the crescendo of presystolic atrial contractions in those with sinus rhythm. In those with atrial fibrillation, the murmur will last throughout diastole of average length. It does, however, not indicate severity unless there is also raised pressure in the pulmonary circuit. In this case there will be right ventricular pulsation and a clearly palpable pulmonary closure sound. The clinical suspicion will almost always receive confirmation from a chest radiograph showing distension of upper lobe pulmonary veins but not in lower lobe. There will be easily visible thickening of edematous septa at the bases—the hallmark of high left atrial pressure. The ECG will show accentuation of the terminal negative portion of V.p. In a few cases right ventricular preponderance will accompany raised pressure.

When this evidence of severe obstruction is unequivocal then the measurement of pulmonary pressure is superfluous. Such measurement, however, is so easy, comfortable, and safe that it is usually undertaken to make certain of the degree of pulmonary congestion. In severe obstruction the mean pulmonary wedge pressure varies between 22-35 mm Hg above mean chest levels and further substantial rises after 30-60 seconds of light exercise such as alternate leg raising.

In patients below age 40 the presence of severe mitral obstruction is sufficient indication to advise closed valvulotomy. This will reduce pulmonary venous hypertension, prevent damage to the lungs. Young women in particular need this protection in early pregnancy when left atrial pressure rises and pulmonary edema may quickly threaten life. In either sex the onset of atrial fibrillation with a fast ventricular rate is an ever-present risk which may well precipitate life threatening pulmonary edema and even embolism. In such a situation valvulotomy is indicated. In older patients in whom the lesion has been present for a much longer time and deterioration is likely to be slow, a more conservative approach is justified. It is particularly in this group assessing need for valvulotomy by degree of deterioration repeated measurements of pulmonary wedge pressures at intervals of a year or more is indicated.

Few patients with mitral stenosis go through life history without onset of atrial fibrillation. The loss of atrial contraction leads to rise in



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Contraindications: As for all other corticoids. *Considered Absolute*—herpes simplex keratitis, acute psychoses and latent, healed or active tuberculosis. May be lifesaving in certain cases of pulmonary or meningeal tuberculosis, but should be used only in conjunction with adequate and effective antituberculous therapy to which causative organisms are shown to be sensitive. *Considered Relative*—active or latent peptic ulcer, Cushing's syndrome, diverticulitis, fresh intestinal anastomoses, osteoporosis, renal insufficiency, thromboembolic tendencies, psychotic tendencies, diabetes mellitus, hypertension, local or systemic infections including vaccination, varicella and other exanthematous diseases, and fungal infections, and, pregnancy particularly during the first trimester because of observation of fetal anomalies in experimental animals. If necessary to give corticosteroids during pregnancy, watch newborn infants closely for signs of hypoadrenalism and institute appropriate therapy if signs appear.

If corticoids are used in the above conditions, weigh risks against benefits.

Precautions: Deltasone should be given only with full knowledge of characteristic activity of and varied responses to corticoids. Because of inhibiting effect on fibroplasia, corticoids may mask signs of and enhance spread of infection; hence, watch patients closely, and if intercurrent infection occurs, control with appropriate antibacterial measures. If possible, avoid abrupt cessation of corticosteroid therapy because of the danger of superimposing adrenocortical insufficiency on the infectious process. Prolonged hormone therapy usually causes a reduction in the activity and size of the adrenal cortex. When discontinuing therapy, relative adrenocortical insufficiency may be avoided by gradual reduction of dose. However, a potentially critical degree of insufficiency may persist asymptotically for some time even after gradual discontinuation of adrenocortical steroids. Therefore, if a patient is subjected to significant stress, such as surgery, trauma, or severe illness while being treated, or within one year (occasionally up to two years) after treatment has been terminated, hormone therapy should be augmented or reinstituted and continued for the duration of the stress and immediately following it. Since mineralocorticoid secretion may be impaired, salt and/or desoxycorticosterone should be administered conjunctively. It is preferable to use a soluble hormone preparation in the immediate preoperative and postoperative periods.

Although unlikely with Deltasone, average and large doses of corticosteroids can cause elevation of blood pressure, salt and water retention and increased potassium and calcium excretion. Dietary salt restriction and potassium supplementation may be necessary. Glucocorticoid steroids may aggravate diabetes mellitus so that higher insulin dosage may become necessary or manifestations of latent diabetes mellitus may be precipitated. Corticosteroids may aggravate myasthenic symptoms in myasthenia gravis and should be given with proper precautions.

Muscle weakness, in some instances, attributed to hypopotassemia, has been reported following prolonged systemically administered corticoids. Excessive potassium loss, like excessive sodium retention, is not likely to be induced with effective maintenance

doses of Deltasone (prednisone), however, keep this effect in mind and perform periodic serum potassium determinations in patients on prolonged corticoid therapy. Muscle weakness occurring with normal serum potassium levels may be due to disturbance in muscle metabolism. Severe myopathy is associated with substantial doses of steroids for prolonged periods, and evidence indicates it occurs more frequently with 9-alpha-fluoro steroids. Replacement with non-fluorinated steroid has, in some instances, resulted in improvement.

Retardation of linear growth, roughly proportional to dose, has been noted in children on corticoids for six months or more. Following cessation of therapy, growth rate may be accelerated. Therefore, carefully observe growth of children on prolonged corticoid and if growth is retarded, reduce dose sufficiently to permit recovery before epiphyseal closure. Make every effort to avoid corticoids during pregnancy, since spontaneous remission of some diseases such as rheumatoid arthritis may occur. Long term corticoid therapy may evoke hyperacidity or peptic ulcer, therefore, as prophylaxis, an ulcer regimen and antacid are highly recommended. Take X-rays in peptic ulcer patients complaining of gastric distress, and, whether or not changes are noted, an ulcer regimen is recommended. Since prednisone causes less salt and water retention than many other glucocorticoids, patients should be observed closely for development of undesirable hormonal effects that are less obvious indications of steroid toxicity than edema and hypertension due to salt and water retention. Continued supervision of patients after cessation of therapy is essential, since there may be a sudden reappearance of severe disease manifestation.

Adverse Reactions: Adverse reactions associated with use of corticoids include: Cushing's syndrome, moon facies, supraclavicular fat pads, hirsutism, striae and acne; relative adrenocortical insufficiency particularly in time of stress due to trauma, surgery or severe illness; protein catabolism with negative nitrogen balance; electrolyte imbalance; alteration of glucose metabolism with aggravation of diabetes mellitus including hyperglycemia and glycosuria; osteoporosis reversible only with difficulty; spontaneous fractures; aseptic necrosis of the hip and humerus; activation and complication of peptic ulcer including perforation and hemorrhage; aggravation or masking of infection; increased blood pressure; convulsions; petechiae and purpura; menstrual irregularities including amenorrhea, spotting or prolonged bleeding; insomnia; psychic disturbances especially abnormal euphoria; nervousness; posterior subcapsular cataracts occasionally requiring extraction; increased intraocular tension; increased intracranial pressure with papilledema (pseudotumor cerebri); pancreatitis; necrotizing angitis; thinning of scalp hair; suppression of growth in children; thromboembolic complications; facial erythema; allergic skin reactions; ulcerative esophagitis; sweating; vertigo; weakness; myopathy; headache; exophthalmos. Adverse reactions are usually reversible and usually disappear when drug is discontinued.

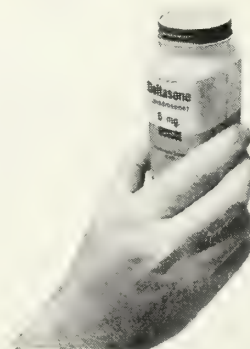
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venous pressure, ventricular filling is further diminished, formation of thrombus within the left atrium is encouraged by the stagnation which results from the loss of atrial contraction. Onset of atrial fibrillation should therefore lead to a careful review of the whole clinical situation. If the ventricular rate is well controlled with digitalis, left atrial pressure may not rise too high in which case valvulotomy is not indicated although long term anticoagulant therapy may be needed to diminish the risk of embolism. When tight stenosis is present, however, it calls for relief. If the cusps are much thickened and rigid and having calcified or if the cause of disability is reflux without obstruction or a combination of the two, then valve replacement by a ball in cage or flat disc variety is likely to be effective.

Some success has lately been reported with aortic valves fastened from the patient's own fascia lata or valves grown from patient's own tissue.¹ If a prosthesis is used, it usually demands permanent anti-coagulation, a definite disadvantage. Since approximately 15 percent of patients submitted to the operation will not leave the hospital alive, mitral valve replacement is not at present recommended for patients whose lives are not seriously threatened. Judgment as to when this stage has been reached is extremely difficult. Who can predict the course of severe mitral stenosis with atrial fibrillation and when systemic embolism will occur. Fortunately, embolism is rare in those with free regurgitation for blood does not stagnate in the left atrium unless it is enormously dilated.

As for prognosis three features clearly mark the downhill trend and together or separately justify the decision to advise replacement. One is the occurrence of congestive heart failure in the face of full digitalization and daily diuretics. Second is the rising in the pulmonic pressure measurements as determined by repeated estimations. Such evidence fortifies the decision to take the serious step of open heart surgery. The third guide is overall heart size. Massive dilatation of the left atrium poses little threat to life but continual dilatation of the left ventricle betokens not only early heart failure, but also the risk the replacement of valves may not afford good recovery.

The results of successful valve replacement usually fully justify the risk taken. Intra pulmonary pressure falls, latent heart failure is relieved

and the patient becomes aware of his former limitations. It is also reasonable to hope that the relief will endure. There are unhappily a few which receive little benefit. One reason is the damage to the contractile power of the myocardium by the rheumatic process. Another reason may be the unsatisfactoriness of the cumbersome prosthesis.

However, these possible failures should certainly not discourage attempts to restore reasonable valve function which can lead to a dramatic improvement.—L.H.N.

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Science Tools: Electrical Stimulator Of The Carotid Sinus In Angina Pectoris

There is a new approach to the management of refractory angina pectoris. It consists of the surgical attachment of bipolar electrodes to both carotid sinus nerves and connecting them to a receiving unit buried in the subcutaneous tissue of the anterior part of the chest. On the skin above this receiver is fixed an induction coil attached to an externally placed battery powered signal generator that the patient switches on when he experiences angina.¹

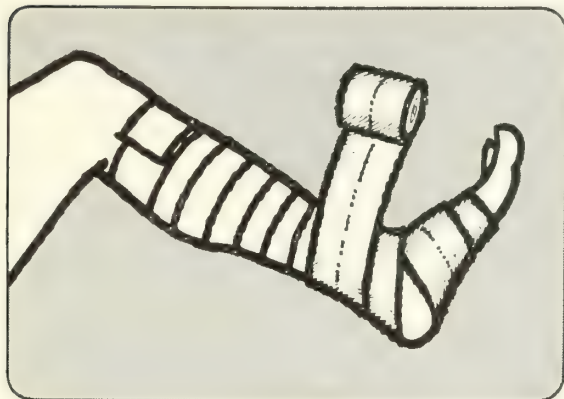
Carotid sinus stimulation leads to a reflex diminution of adrenergic discharge to the entire cardio vascular system. Arteriolar dilation occurs myocardial rate is slowed and contractility reduced all of which reduce myocardial oxygen requirements. Since it is necessary to stimulate the carotid sinus nerves electrically for only a brief period until angina is relieved, the decrease in contractility persists for just a brief period and does not disturb cardiac compensation in patients with advanced heart disease as the beta adrenergic blocking agent propranolol does.

Of the three major methods available for the treatment of angina pectoris, nitroglycerin, propranolol and stimulation of the carotid sinus nerves, the last is the most powerful means of reducing the requirements of the heart for oxygen by both vasodilatation which is achieved by nitroglycerin and propranolol which reduces cardiac output through reducing the sympathetic drive. Most important seems to be the

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reduction in arterial pressure. If angina is not relieved by carotid sinus nerve stimulation electrically, the use of nitroglycerin should be helpful since the direct vasodilation action of nitroglycerin is additive to the indirect vaso-dilatation produced by reflex inhibition of the activity of the sympathetic nervous system.

The question is what appears to be the proper place for carotid sinus stimulation among the armamentarium employed in the treatment of patients with angina pectoris. At present this mode of therapy has been applied in only a few patients at the NIH.² They had long standing refractory angina and in these the method has proved to be highly successful. It is possible that since carotid sinus nerve stimulation allows increasing physical activity in patients with severe coronary artery disease, formation of collateral vessels could occur and thereby favorably influence the chronic cause of the disease. But so for that matter might nitroglycerin if taken before a physical effort.

It must be stressed that the stimulation requires the surgical application of the electrode stimulator under general anesthesia and this has a predictable risk. Accordingly implantation of the pacemaker should be offered to patients in whom the use of nitrites, propranolol and other drugs has not been successful in diminishing the frequency of angina pectoris.

The question of the relative merits of carotid sinus nerve stimulation v.s. implantation of the internal mammary artery into the ischemic myocardium³ or of reconstructing a coronary artery⁴ in patients with angina pectoris is not settled. However, it appears that the method of providing symptomatic relief of angina by carotid sinus nerve stimulation is preferable in older patients with advanced heart disease in whom the risks of thoracotomy are particularly hazardous. Perhaps the Vineberg procedure or if there is segmental obstruction in a coronary artery, the saphenous vein bypass graft technics are more applicable in younger patients in whom improved myocardial perfusions and long term rehabilitation are of special importance.

The long term results of these three surgical procedures have not been fully determined. If, however, the first of the three surgical procedures proves ineffective it is still possible to undertake procedures directed toward increasing coronary blood flow.—L.H.N.

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How To Assess Progress And Response To Treatment In Rheumatoid Arthritis

Rheumatoid arthritis has a natural fluctuation, undergoes spontaneous remissions and exacerbations of varying length, and it is these events which have permitted bias and chance to enter, promoting favorable reports of remedies later discarded. Moreover the psychological effect of a new treatment may greatly influence a patient's symptoms and mental attitude which in turn may impart bias to an enthusiastic observer anxious to find support for his favorite ideas. For instance a review of 46 reports on the use of indomethacin in rheumatoid arthritis demonstrated that the strength and enthusiasm for the drug varied inversely with the quality of the investigation.¹

The more remarkable the claim for the efficacy of a preparation, the more searching are the analysis and tests needed to convince the physicians. There is of course need for carefully designed trials and adequate methods of assessment. We now have universal insistence on controlled clinical trials under double blind conditions. To accomplish this however there are first needed criteria for the diagnosis of rheumatoid arthritis for otherwise it is not clear whether one is treating a heterogeneous group of diseases or just one.

The American Rheumatism Association (ARA) has been particularly helpful in the formulation of just such criteria. Otherwise the apparently simple procedure of setting up a proper trial is beset with difficulties. The Cooperating Clinics of Committee of the ARA demonstrated the fallacy of dose-response inferences. Positive correlations were observed between improvement and numbers of capsules consumed regardless of their content. They found also that knowledge

of assessments from previous weeks is capable of unconsciously influencing observers despite determined efforts to maintain unbiased conditions by the use of double-blind methods. A separate form was proposed to be used for recording assessments each time the patient is seen.

Adequate therapeutic criteria are equally important. However to achieve this it is essential to develop a correct definition of rheumatoid arthritis, a classification of its stages and a grading of impairment of function. One method of Mandel provides for a general clinical assessment of the observer, the patient's own assessment, the determination of an index of activity in the joints and the estimation of functional capacity. Accordingly there were devised instruments for measuring strengths, range of movement, tenderness and swelling the use of the sedimentation rate and hemoglobin levels. Correlation coefficients were then constructed which pointed to significant associations between the observer's clinical assessment and other methods of assessment. The closest association was that between clinical change recorded by the observer and clinical change as assessed by the patient.

Lansbury² later devised a "systemic" index and an "articular" index. He started with the view that a method for evaluation should be capable of being performed by any doctor in a few minutes with no special apparatus or complicated laboratory aids. It should be applicable to the majority of patients. The results should be capable of numerical expression and the degree of interobserver error should be insignificant. His systemic index consisted of a quick objective measurement of the five cardinal features of rheumatoid activity, morning stiffness, pain (need for aspirin), fatigue (time of onset after rising), muscle weakness (grip strength), and sedimentation rate. The values were totaled by reference to a table.

The confidence in this method arose from the fact that changes in the index were always closely parallel to his own and to the patient's impression. The index could identify when the patient went into full clinical remission. Exacerbations after operations or during acute infections or emotional states were clearly also reflected in the index. The index also registered response and relapse associated with ingestion of known anti-inflammatory drugs given double blind.

The difficulties with most of the features measured in rheumatoid arthritis is that they are largely subjective. The main endeavors to achieve objectivity have concerned the measurement of joint swelling, the sedimentation rate, joint stiffness and above all recognizing and grading the pain response. The importance of joint tenderness has been recognized by many workers and it has also been recognized that routine palpation by the fingers may be inadequate or in fact misleading. A number of instruments have been devised variously called palpometer, palpameter, dolorimeter and algesiometer.

It is, of course, true as Lord Kelvin's declaim holds "when you can measure what you are speaking about and express it in numbers you know something about it . . . when you cannot express it in numbers your knowledge is of a meagre and unsatisfactory kind. It may be the beginning of knowledge but you have scarcely in your thoughts advanced to the state of Science." It is true that we tend to think that if we attach a simple-number value to a phenomenon that we know more about it than we did before. We must remember, however, that all numbers are abstractions and that a qualitative description may at times be nearer to reality than an index. This, of course, is not always true for the proof of the index lies in whether it works and this is a good defense of Lansbury's index.—L.H.N.

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Science Tools: 31. The Mammalian Cell Culture

Mammalian cell cultures have now become an important biological tool. New techniques are well defined, complex media and equipment are available from commercial supply houses, ever since the physical and chemical requirements for cell growth have been accurately defined and quantitative methods established. What are its strong points and what are its disadvantages? What are the pitfalls that can be avoided? Where will the use of this tool lead us and what new areas may be exploited in the near future?

There are many text-books which adequately describe the techniques needed for quick isolation of mammalian cell lines from a variety of tissues and for maintenance of these cells once they are growing in vitro. The chief hazards for the biochemist are contamination of the cells with bacteria, fungi or mycoplasma, and the possible mixing of cells from one cell line to another. The microbial infections can usually be cured through judicious use of antibiotics. The mixing of cell lines can sometimes be resolved by immunochemical testing or the acquisition of new cultures. Once these hazards are appreciated, the biochemist and others interested in mammalian cell cultures have a new tool at hand for exploitation of new areas of research.

Thus far there are several applications of mammalian cell culture in addition to those related to virology and to cancer research. These include a study of the mechanisms of cytotoxicity and correlation of the cytotoxicity of drugs with other pharmacological attributes. Then there is the study of the biogenesis of hormones and other vital products at the cellular level. The determination of nutritional requirements of mammalian cells from "specialized" tissues or cells grown under unusual stresses can be determined. The study of host-parasite relationships at the cellular level can be achieved through cell cultures also. The cell culture has also been used in studying the life cycle of the cell, radiation effects as well as nuclear cytoplasmic interactions.

Among various animal cell types that have been cultivated for long or short periods in vitro are epithelial cells, connective tissue cells, cartilage and bone cells, nerve cells, muscle cells, reticular cells from bone marrow, lymph nodes and spleen and leucocytes from the blood, all of which may be derived either from the embryo or the adult. Depending on their origin some of these cells can be cultivated continuously whereas others multiply slowly and some not at all. For example leucocyte cultures are for the most part short-lived cultures, in which there is cell proliferation without a net increase of the cell population. The changes in morphology and function of leucocytes in such cultures is associated with significant biochemical phenomena.

Perlman¹ has recently evaluated the biochemical potential of established cell lines, that is cells which have been in tissue culture for generations. These cell lines although sometimes of

heterogeneous populations are readily available to biochemists and other laboratory scientists from a variety of sources including the American Type Culture Collection, as well as from several commercial biological supply houses.

One thing that can be studied is the mechanism of cytotoxicity by carcinolytic agents. Here Perlman points out some of the problems. Agents with high cytotoxicity in vitro do not a priori depress formation of bone marrow in man. Similarly potent anti-inflammatory compounds showing cell toxicity in vitro may not exhibit this characteristic in vivo. This means of course that for the present translation of results of experiments at the cellular level, to the whole animal will continue to be hazardous.

An interesting development in cell culture has been the isolation of cell lines which maintain their ability to produce hormones found in the tissue of origin. At first only traces were produced and soon the cells lost their ability to synthesize the hormone product. This was because some non-hormone producing cells like connective tissue overgrew and stifled hormone production. This led to a search for procedures to avoid this complication. Now select cells have been developed in pure culture from the adrenal cortex to produce three progesterones! Cells from a rat pituitary that synthesize ACTH, growth hormone and prolactin are now available in tissue culture. So also are melanin producing cells from a teratoma. With such pure cell lines it is possible to make uncomplicated studies of mechanisms involved in the biogenesis of hormones.

Specialized cell lines are now available to study nutritional requirements. Originally emphasis was placed on growth, but now attention is being paid to requirements for enzyme synthesis and nucleic acid composition as well as multiplication. We now have remarkably sensitive methods for measuring enzyme activity and establishing enzyme identity. Perhaps studies at the cellular level will determine what nutritional factors are needed for synthesis of the enzymes which produce growth hormone insulin, corticosteroids, specific antibodies.

Knowledge of these requirements may lead to new chemotherapeutic use of "old" compounds or to the development of new ones. In fact we may expect that nutritional studies at the cellular level will show special requirements of rejuvenation of aging cell populations and for "repair" of physically and chemically injured cells.

Such knowledge should also lead to effective means of combatting of intracellular infections by microorganisms or viruses. So far the mammalian cell culture technique has already proved to be an invaluable aid in the study of intracellular parasitism by mycobacterium tuberculosis, brucellae, salmonellae, staphylococcus dentatus and trichomonas vaginalis.

Cultures of cells from naturally resistant and susceptible tissues presents an opportunity to examine the question of whether susceptibility of certain diseases depends on the establishment of the etiologic agent intracellularly. This system, that is the infectious agent growing in a "pure mammalian cell culture," provides the biochemist with the opportunity for a controlled operation which is not easily obtained in infected animals.

The mammalian tissue culture tool was first described as far back as 1908 by Nobel laureate Ross G. Harrison of Yale, who first maintained nerve cells for months in vitro. However, technology was cumbersome, definition of physical and chemical requirements was poor and no quantitative methods were at hand until Gay and Earle in the 40's succeeded in maintaining a variety of cells in vitro by use of rather simple media. Definition of principles followed and now we are well on the way to solving many fundamental questions from cancer, infection, hormone production, the aging process and much else.—L.H.N.

Reference

1. Perlman, D.: Value of mammalian cell culture as a biochemical tool. *Science*, 160: 42, 1968.

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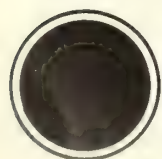
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VITAL STATISTICS

LOCATION: northerly from U.S. Route 20,
West Becket, Mass.
LATITUDE: 42 degrees, 16 minutes, north
LONGITUDE: 73 degrees, 7 minutes, west
ALTITUDE: ranges from 1,560 to 1,995 feet
above sea level
SLOPES: from 3 to 25 per cent, mostly less
than 15 per cent
VEGETATION: mostly wooded, mixed deciduous
and evergreen, some meadowland
HYDROLOGY: three watersheds, two of them
originating on the property
AVERAGE ANNUAL PRECIPITATION: 48 inches
AVERAGE ANNUAL SNOWFALL: 81 inches
PREVAILING WINDS: summer, southwest;
winter, northwest
HOMESITE AVERAGE: range from 4.75 to
6.66 acres
CONDOMINIUMS: 55
ACREAGE IN CONDOMINIUM AREA: 56
TYPE OF ROADS: gravel, except for paved
portion at access
UTILITIES: Electric and telephone, all underground
DEVELOPER: Ponderosa, Inc.

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Leonard R. Tomat
Assistant Executive Director
Scientific Activities

SUMMARY OF ACTIONS COUNCIL MEETING Friday, March 26, 1971

Date of Next Meeting

The next meeting of the Council will be held on Wednesday, April 7, 1971.

I. Attendance

Present in addition to the Chairman, Dr. S. J. Martin, and the Vice-Chairman, Dr. K. F. Brandon, were: Drs. Granoff, Weber, Grendon, Burnham, Edson, Abbot, Dean, Gardner, Fabro, Rem, Cramer, Ragland, Harwood, Wilson, Nemoitin, Van-Syckle, Friedberg, Johnson, Harkins, Freedman, Root, vonGlahn, Hess, Bradley and Purnell.

Also present were: Mrs. Lindquist, Mr. Donelan (AMA), Mr. Sullivan, Mr. Tomat and Dr. Richards.

Absent were: Drs. Palomba, Roch and Klare.

II. Routine Business

Approval of Minutes

As printed and distributed, it was VOTED to approve the minutes of the meeting of February 24, 1971.

Life Memberships

It was VOTED to approve applications for Life Membership received from the following eligible Active Members:

C. Thomas Chiamonte, 1 Padanaram Road, Danbury—(FCMA)—1971.

Reginald C. Edson, 4 Cherryfield Drive, West Hartford—(HCMA)—1972.

Martin I. Hass, 752 Hill Street, Bristol—(HCMA)—1972.

Louis O. LaBella, 760 Saybrook Road, Middletown—(MCMA)—1971.

Kurt Pelz, 330 Harrison Road, Wallingford—(NHCMA)—1971.

Vincent J. Morrissey, Veterans Hospital, Rocky Hill—(NHCMA)—1971.

Samuel B. Rentsch, 61 Seymour Avenue, Derby—(NHCMA)—1972.

Victor L. Szanton, 314 Elizabeth Street, Derby—(NHCMA)—1971.

Frank O. Wood, 28 Gloucester Lane, West Hartford—(HCMA)—1971.

III. Old, New and Special Business

Election of Student Member

It was VOTED to elect to Student Membership the following student who is enrolled at the medical school indicated: Robert J. Allen, 70 Moose Hill Road, Trumbull, Howard University School of Medicine, Class of 1974, Pre-Med: Johnson C. Smith University, Parent: Andrew Allen.

Resignations, Appointments, Etc.

- (a) *Nomination for CSMS Secretary, 1971-72:* It was VOTED to accept with regret the decision of Reginald C. Edson, West Hartford, to withdraw from nomination to the post of Secretary for 1971-72, and it was further VOTED to nominate Louis C. Backhus, Waterbury, to replace Dr. Edson as the nominee for Secretary.
- (b) *Board of Examiners for Physical Therapists:* It was VOTED to nominate, for appointment by the Governor, Otto G. Goldkamp, Hartford, to succeed himself as a member of this Board for another five-year term.

State Legislation

- (a) *CSMS Section Participation in Legislative Program:* It was VOTED to approve a recommendation of the Committee on State Legislation as follows: That the Council demand that the president of each CSMS Section appoint a member of the Section to serve as a contact for the Committee on State Legislation, to prepare "position papers" on bills which the Society and/or the Section determines to support or oppose, and to be responsible to appear (or furnish a substitute) at public hearings to present the Society's position on such bills.
- (b) *Renewal of Licenses of Hospital Maternity Services:* It was VOTED to bring to the attention of the Chiefs of Obstetrical Services in all

Connecticut hospitals one or more bills now before the General Assembly which would authorize the State Health Department (Commissioner of Health) *not* to renew the license of the service unless demonstrable need of the service to the community could be established, and to urge such Chiefs to write letters to the members of the legislature's Committee on Public Health and Safety and/or contact their local legislators to state their views on this proposal.

- (c) *Criticisms of Legislative Program:* The Chairman of the Committee on State Legislation and the Executive Director brought to the Council's attention several letters of criticism and/or complaint received from Section representatives concerning the short notice given them on bills and Assembly hearings, failure to bring bills of interest to their field to their attention, etc. Explanations of these occurrences were offered by the Committee chairman and the Executive Director. No action was taken on this matter, the Council apparently feeling that the legislative program is being carried on as effectively as possible under some very trying circumstances.

Policy Statement re Third Party Payments to Certain Salaried Physicians

It was VOTED to approve a subject policy statement, as amended, submitted by the Committee on Third Party Payments and to send information copies of same to: The State Welfare Commissioner and Medical Director; the Commissioner of Health; the Commissioner of Insurance, the chiefs of staff and administrators of all Connecticut hospitals and the members of the Title XIX (Medicaid) Medical Advisory Committee. The text of the statement follows:

The sending of a bill to a patient by a physician or organization representing him carries with it certain implications:

1. That a service was rendered to the patient which can be accurately described.
2. That the physician in whose name the bill was sent actually rendered or personally supervised the service and has made himself known to the patient or patient's family as the attending or responsible physician.
3. That a physician who has contracted with a hospital to provide stipulated medical services to stipulated categories of patients on a salaried basis shall not, in addition, bill such

categories of patients for such services and hence, in effect, be paid twice for the same services.

Problems have arisen with respect to teaching situations. It is well accepted that careful teaching and supervision may require more time than if the teaching physician went ahead and provided the service himself. The following is offered as an additional guideline in teaching situations where a bill is rendered by or in the name of a supervising attending physician:

1. The physician in whose name the bill is rendered will have provided the service.
2. The charge should not exceed usual, reasonable and customary charges for the area.
3. In the case of surgical and obstetrical procedures, the supervising physician must:
 - A. Examine the patient prior to the procedure and make a brief note.
 - B. Be physically present and scrubbed as first assistant during the substantial portion of the procedure.
 - C. Continue to supervise the patient's care post-op and record this briefly in the chart.
 - D. Sign and approve the operative note and discharge summary.

Information copies of this statement have been sent to: The Department of Welfare; Chairman, Title XIX Medical Advisory Committee; Chiefs of Staff, Connecticut Hospitals; Hospital Administrators; the Commissioner of Insurance; and the Commissioner of Health.

Report re "Foundations"—Committee on Third Party Payments

It was VOTED to approve, as amended, two subject reports submitted by this Committee as follows:

- (a) *The Hennepin County (Minnesota) Medical Society Plan:* The Committee concludes that the Hennepin County Plan seems to be one way to set up a peer review organization at the state level and recommends that the Council refer this Plan to the Ad Hoc Committee on Peer Review Planning for further study.
- (b) *Peer Review Purposes:* "Peer review should be a state function to be used to help those county associations that do not have effective peer review organization and to establish broad uniform procedures throughout the state. The state PRO should also work in concert with those county associations that do have effective peer review mechanisms".

Dimetapp Extentabs®

INDICATIONS: Dimetapp Extentabs are indicated for symptomatic relief of allergic manifestations of upper respiratory illnesses, such as the common cold, seasonal allergies, sinusitis, rhinitis, conjunctivitis and otitis. In these cases it quickly reduces inflammatory edema, nasal congestion and excessive upper respiratory secretions, thereby affording relief from nasal stuffiness and postnasal drip.

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WARNINGS: *Use in children:* In infants and children particularly, antihistamines in overdosage may produce convulsions and death.

PRECAUTIONS: Administer with care to patients with cardiac or peripheral vascular diseases or hypertension. Until the patient's response has been determined, he should be cautioned against engaging in operations requiring alertness such as driving an automobile, operating machinery, etc. Patients receiving antihistamines should be warned against possible additive effects with CNS depressants such as alcohol, hypnotics, sedatives, tranquilizers, etc.

ADVERSE REACTIONS: Adverse reactions to Dimetapp Extentabs may include hypersensitivity reactions such as rash, urticaria, leukopenia, agranulocytosis and thrombocytopenia; drowsiness, lassitude, giddiness, dryness of the mucous membranes, tightness of the chest, thickening of bronchial secretions, urinary frequency and dysuria, palpitation, hypotension/hypertension, headache, faintness, dizziness, tinnitus, incoordination, visual disturbances, mydriasis, CNS-depressant and (less often) stimulant effect, anorexia, nausea, vomiting, diarrhea, constipation, and epigastric distress.

HOW SUPPLIED: Light blue Extentabs in bottles of 100 and 500.

Report—Committee on Professional Liability

It was VOTED to approve (subject to appropriate amendment) a report of this Committee which presented ten (10) "basis principles" on which it is proposed to proceed to develop a CSMS-approved program of professional liability insurance for the membership, and it was VOTED to approve, and transmit to the House of Delegates, the report and a related recommendation as follows: That the Committee on Professional Liability be authorized to explore possible arrangements with Mr. Joseph Britton and his Associates (of New Jersey) to be available as consultants, on an as-needed basis, to assist the Committee during the final developmental phase of the program, and to report and make recommendations to the Council concerning such possible arrangements. During the presentation and discussion of the Committee's report, the Council was joined by two representatives of the Aetna Company who elaborated on the various features outlined in the "basic principles" and answered questions. Without vote, it was agreed that the identity of the proposed underwriter of the program would remain unspecified until a joint Aetna-CSMS press release is made (about mid-April) announcing the intention of the two organizations to work cooperatively toward the initiation of such program. Kenneth F. Brandon, Hartford, desired to be recorded as abstaining from the vote on this item.

Endorsement—Southern Connecticut Kidney Disease Program

Acting on a recommendation of the Ad Hoc Committee on Statewide Medical Planning, the Council VOTED to endorse the Southern Connecticut Kidney Disease Program which plans to expand and make more available specialized treatment facilities for the treatment of advanced renal diseases. Notice of this endorsement will be sent to: Dr. Henry T. Clark, CRMP; Commissioner Franklin M. Foote, State Department of Health; Dr. Orvan W. Hess, Medical Director, State Welfare Department; Dr. Harold Margulies, Director, (National) Regional Medical Program Service; Dr. Edward Blomquist, Acting Chief, Kidney Disease Control Program, (National) RMP Service; and Dr. Leona Baumgartner, Executive Director, Tri-State Regional Medical Program.

Proposed 1971 CSMS Relative Value Scale

It was VOTED to approve a subject report of this Committee, and an accompanying "rough draft" of the proposed subject document, as the bases for the final development, publishing and

distribution to the membership of a "1971 CSMS Relative Value Scale". It was further VOTED to transmit the Committee's report and the "rough draft" document to the House of Delegates with a recommendation that they be similarly approved by the House.

Two related actions were taken as follows:

- (a) It was VOTED to approve a recommendation of the Committee that, if approval of the proposal is given by the House of Delegates, the balance of the \$7,200 previously allocated for the publication of an RVS (unspecified) be applied to the publication and distribution of the 1971 RVS now being presented.
- (b) It was VOTED to direct the staff, in consultation with S. Pierce Browning, Norwich, a member of the Committee, to prepare an explanatory preface of the 1971 CSMS RVS which will serve to explain the major differences of the new document from the 1964 California Relative Value Studies (adopted by CSMS in 1965) and to orient the members to its usage.

Symposium on Sickle Cell Anemia

It was VOTED to endorse a proposal of the Committee on Perinatal Morbidity and Mortality to commit the Society to co-sponsorship (with the State Health Department, the Pediatric Departments at the Yale and UCONN Medical Schools and the Hezekiah Beardsley Chapter of the American Academy of Pediatrics) of a symposium on sickle cell anemia and the continued study thereof. The tentative date: May 26, 1971. The place: The Auditorium of the Connecticut General Life Insurance Company, Bloomfield. Funding: All expenses will be paid from a grant administered by Broadcast Plaza, Inc., Hartford.

Report—Committee on Postgraduate Education

- (a) *Connecticut Health Library Service*: It was VOTED to approve a recommendation of the Committee that the Council commend the CRLS for the worthwhile study that it has made of the medical library resources in the state and to note that the project was very well documented and probably constitutes one of the most important projects undertaken by the Connecticut Regional Medical Program, and so notify CRMP et al.

- (b) *Continuing Medical Education vs. Continuing CSMS Membership*: Pursuant to one of its previous recommendations to the Council, the Committee again recommended that evidence of continuing medical education should be a requirement for continuing membership in CSMS. A subject resolution was submitted by the Committee as follows:

"RESOLVED:

That minimum standards of continuing education be established as the basis for continued membership in the Connecticut State Medical Society."

While practically unanimous support was expressed for the purpose of this resolution, the discussion of it that ensued brought out the fact that since membership in CSMS is contingent upon membership in one of the component County Medical Associations, such a requirement would have to be accepted by the County Associations and would have to be practical of administration at both the state and county levels. For these reasons, the Council VOTED to adopt a substitute resolution and transmit same to the House of Delegates with a recommendation that it be adopted by the House. The text of the substitute resolution follows:

"BE IT RESOLVED:

That the House of Delegates of the Connecticut State Medical Society support the concept that continued membership in the Society and in the component County Medical Associations shall require evidence of continuing medical education and be it further

"RESOLVED:

That the House of Delegates charge the CSMS Committee on Postgraduate Education to develop and submit to the Council a system of CSMS-sponsored and/or CSMS-approved programs of continuing medical education designed to make practical the implementation of such concept."

N.B.: *The foregoing is a summary of the proceedings and action of the Council on March 26, 1971. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by an interested member of the Society.*

HOME HEALTH AGENCIES

Everyone in Connecticut has access to skilled nursing care in his own home. Physicians may order professional nursing and rehabilitation care with costs being borne directly by the patient, or in certain cases through Medicare or by third party payors. Agencies providing such service also adjust fees according to the patient's ability to pay. Regular nursing visits can ease the transition between hospital and home for a patient and his family. The assurance of nursing care and supervision may make it possible for a patient to leave the hospital sooner. It can help elderly patients remain at home longer and perhaps prevent the trauma and expense of transfer to a nursing home or a hospital extended care facility.

Community home health agencies, or visiting nurse associations, provide professional nursing care, including rehabilitation, in the home, under orders of the patient's physician, as well as health teaching and nursing care during pregnancy, and following delivery. Physical therapy, speech thera-

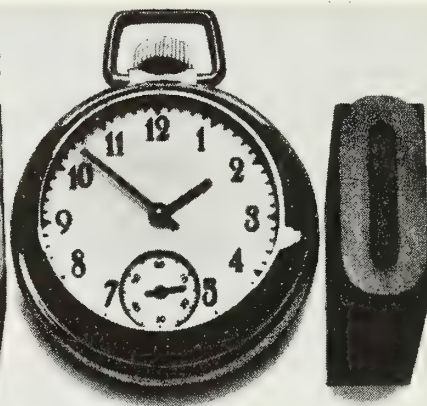
py, occupational therapy and home health aide services are also available to patients in their homes in many communities.

Patients may benefit from the personal care of a trained home health aide. Such an aide, working under the supervision of a nurse, can give bed baths and care for the personal hygiene of patients, prepare meals and, perhaps most important, provide the emotional support needed by the sick and aging. Her daily observations, reported through her supervisor, can keep the physician regularly informed of patient progress.

In short, more effective use of the services of home health agencies by physicians can decrease the cost of health care, reduce hospital and institutional expenses for all patients and help elderly, chronically ill people to remain in their own houses for a longer period. The home health agencies (visiting nurse associations, public health nursing services, or nursing associations of each town) can help you to locate and to provide the necessary care for your patients.

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Usage in Pregnancy: Weigh potential benefits in pregnancy, during lactation, or in women of childbearing age against possible hazards to mother and child.

PRECAUTIONS: If sleeplessness is pain-related, an analgesic should also be prescribed. Perform periodic blood counts if used repeatedly or over prolonged periods. Total daily intake should not exceed 400 mg, as greater amounts do not significantly in-

crease hypnotic benefits.

ADVERSE REACTIONS: At recommended dosages, there have been rare occurrences of morning drowsiness, dizziness, mild to moderate gastric upset (including diarrhea, esophagitis, nausea and vomiting), headache, paradoxical excitation and skin rash. There have been a very few isolated reports of neutropenia and thrombocytopenia; however, the evidence does not establish that these reactions are related to the drug.

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Anesthesiology—34 years of age, Certified, wishes solo, group or institutional type practice in a large or medium size community in Connecticut. Interested in intensive care and teaching. Presently in practice.

Family Practice—44 years of age, Eligible, wishes solo type practice in a small community in Connecticut. Presently in practice. Part-time position industrial medicine or school. Reasonable proximity to New Haven-Cheshire-Waterbury area. Available immediately. Connecticut license.

General Practice—Emergency Room—29 years of age, wishes associate, institutional or industrial type practice in Connecticut. Desire Locum Tenens for the months of July and August and part-time for remainder of year (evenings and weekends). Military obligation completed. Connecticut license.

General Practitioner—33 years of age, American Board Eligible with National Boards wishes solo type practice in a medium size community in Connecticut. Military obligation completed. Contact: Joseph L. Hokik, M.D., 383 Rochester Street, Fall River, Mass. 02720.

Internal Medicine—Nephrology—30 years of age, American Board Eligible wishes group, associate or institutional type practice in a large or medium size community in Connecticut. Contact: Maher A. A. Azer, M.D., Holiday Garden Apts., Iowa City, Iowa 52240.

Internal Medicine—30 years of age, Eligible with National Boards, wishes group or associate type practice in a large community in Connecticut. Military obligation completed. Connecticut license.

Internal Medicine—Pulmonary—32 years of age, National Boards, wishes group or institutional type practice in a large or medium size community in Connecticut. Presently in practice. Contact: Stephen R. Fish, M.D., 19 Rockaway Lane, Arlington, Massachusetts 02174.

Internal Medicine—32 years of age, Certified with National Boards wishes group or associate type practice in Connecticut. Interested in group practice and possibly teaching on house staff level. Military obligation will be completed in July. Contact: Sanders T. Frank, M.D., 48 TAC Hospital, APO New York 09179.

Internal Medicine—Gastroenterology—31 years of age, American Board Eligible with National Boards wishes solo, group, associate, institutional or industrial type practice in a large or medium size community in Connecticut. Connecticut license. Military obligation completed. Contact: Arnold L. Klipstein, M.D., 113 Florence Road, Branford, Connecticut 06405.

Internal Medicine—Hematology—34 years of age, Eligible with National Boards wishes group or associate type practice in a medium size community in Connecticut. Presently in practice. Military obligation completed.

Internal Medicine—33 years of age, Certified with National Boards wishes solo, group or associate type practice in a large community in Connecticut. Prefer to be with hospital with full house staff. Military obligation completed. Contact: William E. Miller, M.D., 115 Niuiki Cr., Honolulu, Hawaii 96821.

Obstetrics & Gynecology—31 years of age, Eligible with National Boards, wishes group or associate type practice in a large or medium size community in Connecticut. Contact: Marvin Bloshinsky, M.D., 2230 Danbury Drive, Columbus, Georgia 31907.

Obstetrics & Gynecology—46 years of age, wishes solo or associate type practice in a medium size community in southern Connecticut. Military obligation completed. Connecticut license.

Obstetrics & Gynecology—32 years of age, Eligible with National Boards, wishes group type practice in a large or medium size community in Connecticut. Presently in practice. Military obligation completed. Connecticut license. Contact: Charles E. Winkelstein, M.D., 1934-B Williford Street, Ft. Eustis, Virginia 23604.

Ophthalmologist—35 years of age, military duty completed, interested in the following opportunities: In Connecticut coastal area: Available space in large medical building, or association/partnership with established ophthalmologist, or purchase of ophthalmology practice from retiring or infirmed practitioner. Must return to east coast due to family reasons, from San Diego where presently in practice. Would consider Locum Tenens.

Ophthalmology—33 years of age, Eligible with National Boards, wishes solo type practice in a medium size community in Connecticut. Connecticut license. Military obligation completed. Available immediately.

Orthopedics—32 years of age, with National Boards, wishes group (specialty group) type practice in a medium size community in Connecticut. Military obligation completed. Contact: Charles F. Mess, M.D., 3821 3rd Street, N.W., Rochester, Minn. 55901.

Otolaryngology—29 years of age, Eligible, wishes solo or associate type practice in a large or medium size community in Connecticut. Connecticut license.

Pediatrician—32 years of age, with National Boards, wishes group or institutional type practice in Connecticut. Military obligation completed. Contact: Richard M. Goldstein, M.D., 2509 Pine Street, Philadelphia, Pa. 19103.

Physician—young, Connecticut licensed physician, Eligible wishes emergency room work on a part-time basis.

General Surgery—31 years of age, Certified with National Boards, wishes group or associate type practice in Connecticut. Contact: Raymond F. Crystal, M.D., 1021-A Drennan Park, Fort Campbell, Kentucky 42223.

General Surgery—32 years of age, Certified, wishes solo, group, associate or institutional type practice in Connecticut. Presently in practice. Contact: Candido E. DeBorja, Jr., M.D., 280 River Road, Apt. 4-B, Piscataway, New Jersey 08854.

General Surgery—Thoracic—31 years of age, Certified, wishes group or institutional type practice in a medium size community in Connecticut. Contact: Antonio T. Donato, M.D., 79 Southbourne Road, Jamaica Plain, Mass. 02130.

General Surgery—32 years of age, Certified with National Boards, wishes solo, group or associate type practice in a

medium size community in Connecticut. Desires a college or university city or town in which to practice. Presently in practice. Available immediately. Contact: Peter A. Gentling, M.D., 1542 Lombard Street, San Francisco, California 94123.

General Surgery—35 years of age, National Boards, wishes group or associate type practice in a medium or small size community in Connecticut. Military obligation completed. Contact: Martien Mulder, M.D., 43 Walnut Street, Coopers-town, New York 13326.

Surgery—Thoracic—34 years of age, (surgery) Certified; (thoracic surgery) Eligible with National Boards, wishes solo, group or associate type practice in a large or medium size community in Connecticut. Military obligation completed. Connecticut license. Contact: Daniel W. van Heeckeren, M.D. Thorax Kliniken, Karolinska Sjkhs, 10401 Stockholm, Sweden.

Urology—33 years of age, National Boards, wishes associate type practice in a large size community in Connecticut. Military obligation completed. Contact: Melvin A. Mackler, M.D., 9306 Newhall Road, Richmond, Virginia 23229.

centers; send curriculum vitae with inquiry to Richard B. Ogreaan, Administrator, Windham Community Memorial Hospital, Willimantic, Connecticut.

Psychiatry—Unexpected vacancy for 2nd or 3rd year resident at Dean's Committee Hospital. Program is a major teaching service of the Yale Department of Psychiatry. The Hospital is fully integrated with Yale School of Medicine. Opportunities for individualized training in Broad range of Inpatient, Outpatient, Day Hospital and Psychosomatic Medicine. For further details contact: Paul Errera, M.D., Professor of Clinical Psychiatry, Chief, Psychiatry Service, V.A. Hospital, West Haven, Connecticut 06516.

Radiology—For sale. Physician retiring. Well established office. Diagnostic Roentgenology. Excellent opportunity for young radiologist. Hospital appointments available. Call New Britain (203) 223-4828.

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Director of Clinical Laboratories needed immediately in 1400 bed State-owned institution for mentally ill. Duties include clinical and anatomical pathology with some teaching and research activities, if desired. Modern facilities, excellent fringe benefits, competitive salary. Write Superintendent, Norwich Hospital, Norwich, Connecticut 06360.

General Practitioner or Internist for incorporated medical group in Meriden, Connecticut. Population of 55,000. Guaranteed salary plus bonuses based on performance. Early partnership with fringe benefits, including pension plan. Write or call the Colony Medical Group, Inc., 377 Broad Street, Meriden, Connecticut. Phone (203) 237-7411.

Pediatrician—Board certified or eligible. Busy practice requires associate—salary first year, then partnership. Excellent location and schools—between New Haven and New York. City facilitates hospital appointments.

Pediatrician—Two Pediatricians in Stamford, Connecticut desire a third partner for active practice. Excellent salary leading to partnership. Contact: Ralph Tella, M.D., or Michael Suchenski, M.D., 107 Glenbrook Road, Stamford, Connecticut. Phone. (203) 324-3440.

Physicians—General Practitioner or Internist to join well established physician nearing retirement. Connecticut shoreline community served by Yale-New Haven Hospital.

Physicians—Established general practice available with medical directorship of a nursing home and cardiovascular diagnostic work if interested. Fully equipped office in a new medical building close to the hospital. Contact: Karl C. Suerig, M.D., Dearfield Medical Building, Dearfield Drive, Greenwich, Connecticut 06830. (203) 661-5664.

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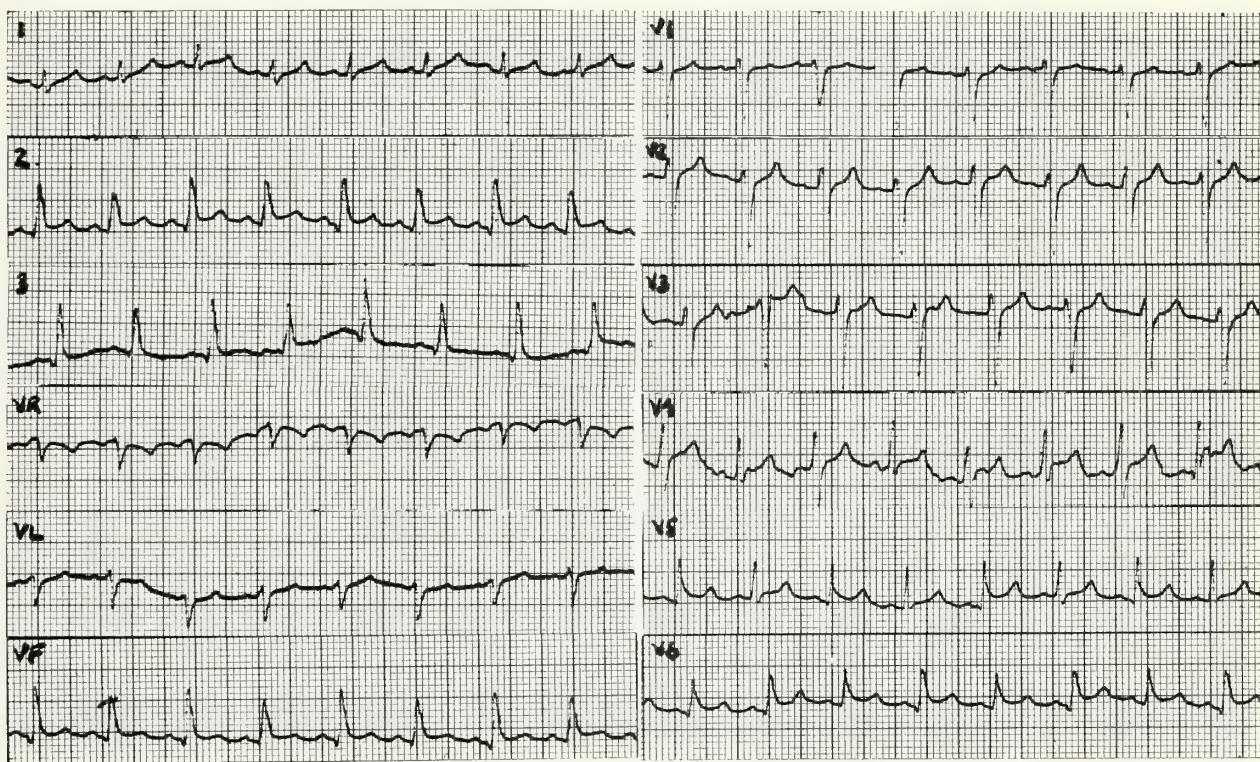
Electrocardiogram of the Month: What's Your Diagnosis?

Yale-New Haven Hospital
New Haven, Connecticut

Prepared by
HYMAN M. CHERNOFF, M.D.
Associate Professor of Clinical Medicine,
Yale School of Medicine
Director, Dept. of Electrocardiography
Memorial Unit, Yale-New Haven Hospital

The following tracing was obtained in a 45 year old male who was complaining of substernal chest pain and dyspnea of several hours duration. Which of the following clinical states was the most likely cause of his symptoms?

- a—Spontaneous pneumothorax
- b—Pulmonary Embolism
- c—Cardiac Tamponade
- d—Inferolateral Wall Infarction
- e—Anterior Apical Infarction



In leads 2, aVF, V4, V5, and V6 there is slight concave elevation of the ST segment. There also is alternation of the QRS complex. Note that the R amplitude diminishes in every other beat in leads 2, aVF, V4-V6 while the S amplitude increases slightly in every other beat in leads V4 and V5.

These findings of electrical alternans of the QRS together with ST segment changes characteristic of pericarditis are almost pathognomonic of a massive pericardial effusion. In this patient over a liter of bloody fluid was removed by pericardiocentesis. Examination of the fluid revealed metastatic carcinoma.

Electrical alternans of the QRS complex may also be found in paroxysmal tachycardia but is of no clinical significance. However, when it occurs at slow heart rates and in the absence of pericarditis it is a sign of a failing myocardium.

The mechanism of electrical alternans in the

presence of cardiac tamponade is not known. McGregor and Baskind theorize that in the presence of a large pericardial effusion rotatory movements of the heart can occur as a result of freedom from the normal mediastinal and pulmonary restraints. As a consequence there is an alternation of the cardiac position with each beat resulting in alternation of the mean frontal and transverse QRS axis. Such alternation usually subsides following pericardiocentesis.

Reference

McGregor, M. and Baskind, E. Electrical Alternans in Pericardial Effusion. *Circulation* 11:837. 1955.

Anesthesiology Grand Rounds

Yale-New Haven Hospital

Myasthenia Gravis

Samuel M. Lerner, M.D. and Frederick W. Hehre, M.D., Editors
John C. Moench, M.D. and Joseph Guaraldo, M.D., Discussants

Dr. Joseph Guaraldo:

A 78 year old male was admitted to the Yale-New Haven Hospital for elective repair of a left inguinal hernia. The patient had noticed a fullness in his groin for the past 40 years. One month prior to admission the hernia descended into his scrotum and he sought treatment.

In 1966, the patient was hospitalized for evaluation and treatment of dysphagia of 5 weeks duration. The dysphagia was characterized by frequent regurgitation of solids and liquids into the nasopharynx. In addition, he complained of blurred vision and slurred speech. A diagnosis of myasthenia gravis was made and the patient was treated with pyridostigmine with immediate relief of all symptoms.

Physical examination revealed an obese elderly male with a large reducible left inguinal hernia. Radiological examination demonstrated extensive osteoarthritis of the dorsal and lumbar vertebrae. The hematocrit was 46%, and blood pressure was 130/80 mmHg.

Premedication was administered at 6:00 A.M. and consisted of pyridostigmine 60 mg orally and diazepam 10 mg intramuscularly. Spinal anesthesia was elected since it represented the least physiological insult and would permit early resumption of oral intake of pyridostigmine. The extensive osteoarthritis of the lumbar spine required a para-

vertebral approach to the subarachnoid space. Tetracaine 10 mg, 10% dextrose, 100 Mgs and epinephrine 0.2 mg were injected into the subarachnoid space. The area of anesthesia extended from S₅ to T₈ bilaterally. The patient's blood pressure declined over the next 35 minutes from an initial level of 140/80 mmHg to 108/70 mmHg when he was given mephentermine 7.5 mg intravenously. The blood pressure promptly returned to 130/70 mmHg and remained there for the rest of the operation. The left inguinal hernia was repaired. At the conclusion of the 1 hour and 35 minute operation he was admitted to the recovery room in good condition.

The patient had been receiving pyridostigmine 69 mg twice daily. He received his second oral dose of pyridostigmine upon returning to his room at 3:30 P.M., and this dosage schedule was maintained for the remainder of his post-operative course, uneventful and he was discharged on the seventh hospital day.

Dr. Samuel M. Lerner: Thank you Dr. Guaraldo. Dr. Moench, would you please discuss the surgical patient with myasthenia gravis?

Dr. John C. Moench: The groups of muscles involved in myasthenia vary from the ocular, which are the commonest, to the bulbar which are the most serious. One fifth of patients present with ptosis and/or diplopia. There is usually a myasthenia facies with tightly drawn muscles about the mouth and immobile features.

There are a large number of clinical and electrical tests with which one can distinguish between various syndromes simulating myasthenia, such as, Parkinsonism, motor neuron disease, progressive bulbar palsy, amyotrophic lateral sclerosis, some posterior fossa tumors, and vascular lesions of the brain. The chief diagnostic test demonstrates that one is dealing with a chemically responsive muscle. Historically, test and therapy for myasthenia are bound together. The disease has been known for

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DR. FREDERICK W. HEHRE is Associate Professor of Anesthesiology, Yale University School of Medicine.

DR. JOHN C. MOENCH is Assistant Clinical Professor of Neurology, Yale University School of Medicine.

DR. JOSEPH GUARALDO is Assistant Resident in Anesthesiology, Yale-New Haven Hospital.

From the Division of Anesthesiology and Section of Neurology, Yale University School of Medicine and the Departments of Anesthesiology and Neurology, Yale-New Haven Hospital, New Haven, Connecticut.

400 years, and first was described in the Elizabethan Age. Oppenheim, at the turn of the century, demonstrated the similarity of myasthenia to curare poisoning. In 1934 Mary Walker, then a junior House Officer at a London hospital, had a patient with ophthalmoplegia and facial weakness. She presented the case to her Attending Physician, Denny Brown, late one afternoon when he was tired and eager to get out. He dismissed her with, "its a curare poisoning-like syndrome". He left and she went to the library and discovered that neostigmine was an antidote for curare. She got permission from her senior House Officer to administer this drug to her patient. The patient promptly sat up in bed, smiled, and could see without diplopia. Mary Walker published her results in *Lancet* that year.

For the next 20 years, neostigmine bromide orally or neostigmine methylsulfate parenterally was the chief mode of therapy for myasthenia. The disadvantage of using neostigmine as a test for the disease, or for the adequacy of treatment, is that the duration of action of the drug is 3 hours, and a patient could be thrown into deep, prolonged cholinergic crisis by a test dose of neostigmine. The appearance of edrophonium in the mid-1950's put a different complexion on testing. Edrophonium is rapidly metabolized, greatly simplifying the test procedure. A patient suspected of myasthenia is given a test of edrophonium intravenously and observed. The patient can be retested five minutes later with an intravenous placebo of saline. A fairly solid diagnosis of myasthenia can be arrived at in a short period of time.

The drug of choice for maintenance therapy is pyridostigmine, a longer acting and more effective drug than neostigmine. Parenteral pyridostigmine is awaiting FDA clearance and should be available within the year.

When a myasthenic is confronted with anesthesia and surgery, I prefer to have their program of oral medications disrupted as little as possible, as in the case of the patient presented today. If an early resumption of oral medication is not anticipated, this might be the ideal time to withdraw all medication and "rest the endplates". This is the treatment for cholinergic crisis. The patient is maintained on a respirator with an endotracheal tube initially, and a tracheostomy if necessary. Medication is introduced gradually and the patient is weaned from the respirator.

The neuromuscular block in myasthenia is similar to that produced by curare. An unsuspected

myasthenic coming to surgery would respond to a normal dose of curare with prolonged paralysis. The effect can last 24-48 hours. A small dose of curare was, at one time, used by the more courageous as a test for myasthenia. But provocative tests are, for the most part, unnecessary.

Discussion

Dr. Nicholas M. Greene: Many patients are maintained on parenteral drugs of various types either for diabetes mellitus, diabetes insipidus. Addisonian-type diseases exhibit changes in their requirements for maintenance therapy which are precipitated by events including infection and surgical trauma. What will alter therapeutic requirements of myasthenics?

Dr. Moench: Intercurrent infections perhaps most commonly increase requirements for anticholinesterase therapy, as will trauma. The effect of pregnancy is unpredictable. A third of gravid women improve, a third are unchanged, a third get worse and require more medication. Emotional stress should not be underplayed. An English Duchess brought her daughter, a pale 18 year old who had difficulty walking, to an eminent neurologist. He told Her Grace that the girl was clearly hysterical and that the cure would be a slap which he promptly administered. The girl fell dead. At post mortem examination the girl was found to have a large thymus. The term "status thymico-lymphaticus" was coined to explain her sudden death. I am not sure what happened, but it is possible that the girl had severe myasthenia and the emotional stress precipitated a myasthenic crisis with respiratory arrest. I think that was the likeliest *modus exitus*.

Dr. Greene: Would you alter dosage in anticipation of a change in the therapeutic requirements?

Dr. Moench: No. I prefer to maintain the patient on usual medication and test the adequacy of treatment with periodic injections of edrophonium.

Dr. Frederick W. Hehre: What is the prognosis of a baby born to a myasthenic mother?

Dr. Moench: There is evidence that a circulating factor crosses the placenta and causes muscular weakness and respiratory distress in the newborn infant. The effect of this circulating factor disappears within 3 weeks, and these children are no more apt to have myasthenia in later life than the average person.

Dr. George Baron: How do you differentiate myasthenic and cholinergic crisis?

Dr. Moench: It is often difficult to distinguish the patient who has been undertreated as in myasthenic crisis from the overtreated patient in cholinergic crisis. Some patients demonstrate the muscarinic effects of drug therapy out of proportion to the nicotinic effects, and so may be undertreated, but have small pupils and abdominal cramps. Edrophonium is the most helpful indicator as how one should proceed. Use a test dose of 2 mg intravenously. The patient in myasthenic crisis will show an increase in muscle power with no fasciculations and no change in pupillary size. A patient in cholinergic crisis will show decreased muscle power, fasciculations and constricted pupils.

INTRAVENOUS TEST DOSE OF EDROPHONIUM 2 MG.

		Muscle Power	Fasciculations	Pupil Constriction
Myasthenic Crisis	↑	0	0	0
Proper Therapy	0	+	+	+
Cholinergic Crisis	↓	++	++	++

Dr. Luke M. Kitahata: This patient received a regional block. Would you comment on the effect of local anesthetics on the neuromuscular junction of myasthenia?

Dr. Moench: I don't know exactly why, but I prefer to avoid peripheral blocks in myasthenics. This patient had a spinal anesthesia.

Dr. Greene: That is a peripheral block. What is the difference whether you block a nerve in the subarachnoid space or paravertebrally?

Dr. Moench: Are you not also blocking the cord?

Dr. Greene: One can produce segmental spinal anesthesia where transmission within the cord is essentially unaffected. I think what Dr. Kitahata refers to is with other forms of conduction anesthesia for example in peridural, or major peripheral conduction blocks, the amount of local anesthetics employed is so great that following its vascular absorption, significant blood levels are achieved. Would elevated blood levels of an agent such as lidocaine, affect the myoneural junction in a myasthenic?

Dr. Moench: I don't know.

Dr. Kitahata: Do you think that this patient was a latent myasthenic prior to age 74?

Dr. Moench: Yes, this disease can occur anytime from childhood on into the 80's but most commonly in the age range of 20-40. Females predominate in 3-1 ratio.

Dr. Greene: Beware of the young woman having her third strabismus repair done. Something more than inept surgery is involved.

Dr. Moench: Keep the Edrophonium handy.

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 for the rest
 of the night

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INDICATION: Relief of insomnia of varied etiology.
CONTRAINDICATIONS: Patients with known hypersensitivity to the drug.

WARNINGS: Caution patients about combined effects with alcohol and other CNS depressants. Caution against hazardous occupations requiring complete mental alertness, such as operating machinery or driving a motor vehicle shortly after ingesting the drug.

Physical and Psychological Dependence: Physical and psychological dependence rarely reported. If withdrawal symptoms do occur they may resemble those associated with withdrawal of barbiturates and should be treated in the same fashion. Use caution in administering to individuals known to be addiction-prone or those whose history suggests they may increase the dosage on their own initiative. Repeat prescriptions should be under adequate medical supervision.

Usage in Pregnancy: Weigh potential benefits in pregnancy, during lactation, or in women of child-bearing age against possible hazards to mother and child.

PRECAUTIONS: If sleeplessness is pain-related, an analgesic should also be prescribed. Perform periodic blood counts if used repeatedly or over prolonged periods. Total daily intake should not exceed 400 mg, as greater amounts do not significantly increase hypnotic benefits.

ADVERSE REACTIONS: At recommended dosages, there have been rare occurrences of morning drowsiness, dizziness, mild to moderate gastric upset (including diarrhea, esophagitis, nausea and vomiting), headache, paradoxical excitation and skin rash. There have been a very few isolated reports of neutropenia and thrombocytopenia; however, the evidence does not establish that these reactions are related to the drug.

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The Committee on Aging of the American Medical Association which has studied this whole area for ten years has come to the conclusion that they can find no disease entity or physical or mental condition that has resulted from the passage of time. Nor was there any prophesized picture condition that could reasonably be expected to occur in anyone after the passage of so much time.

Geriatrics, which means disease of the aging, is used quite frequently. The Committee on Aging AMA was unable to find any disease entity that was of necessity related to the passage of years or time. Arteriosclerotic heart disease, high blood pressure, arthritis and cancer are found among the youngsters and measles and mumps and chickenpox and poliomyelitis are found among the oldsters.

The clinical picture under these circumstances varies only as the (seed) and the soil vary. This complete breakdown of past philosophy leads us to pay serious heed to the results coming from recognized research laboratories. More and more it is indicated that the so-called degenerate diseases of men result from the impact of environment on that prefabricated hereditary structure that is man.

In the laboratory we see these diseases that occur in animals exposed to hunger, extremes of temperature, lack of oxygen, infections, loss of blood or fear with the same, with little relationship to the age of the animals. In other laboratories environment is regulated in the direction of protection of the individual from the effects of environment and we see members living for unbelievably long time.

The chronic diseases and the long term illnesses which constitute the major problem of medicine today result from the recurring and irritating effects of environment over a long period of time and are the results of these irritants and not the

passage of time. The pot belly, the flabby muscles of study and forgetfulness that come when the that result from lack of exercise, the loss of habits mind is not used, and the painful knees and flat feet that come from long time pounding by too much weight present a picture of dilapidation that represents *not* the passage of the hours, but lack of any care.

Based on these observations, the poem, "Good Timber," embodies the principles which again will make the human race strong and assure them of added years.

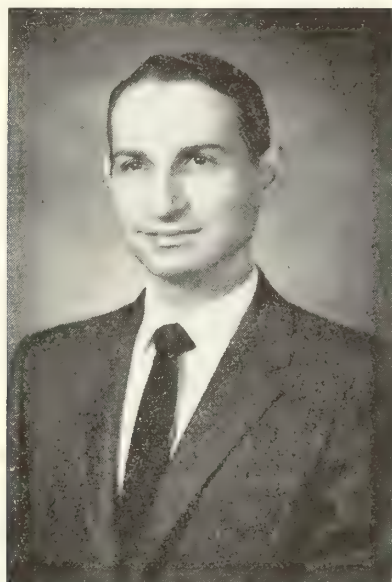
The tree that never had to fight
For sun and sky and air and light
That stood upon the open plain
And always had its share of rain
Never became a forest king.
It lived and died a scrubby thing.
The man who never had to toil
To heaven from a common soil
Who never had to win his share
Of sun and light and sky and air
Never became a manly man
But lived and died as he began.
Good timber does not grow in ease
The stronger wind the tougher breeze
The farther sky, the greater length
The more the storm, the more the strength
By sun and cold, by rain and snow
In trees or men good timber grows.
Where thickest stands the forest's growth
We find the patriarchs of both
And they who converse with the stars
Whose broken branches show the scars
Of many winds and much of strife
This is the common law of life.

Excerpts from a talk by Dr. Frederick C. Swartz.

OBITUARY

Irwin M. Israel, M.D. 1927-1971

Irwin M. Israel passed away in the 43rd. year of his life on March 14, 1971, after a long and painful illness. Dr. Israel was physician for the community of Colchester for over 16 years. He served as health officer, school physician, community and religious leader, advisor and friend for the thousands of people in his service area.



Dr. Israel was born in New York City on April 10, 1927. After obtaining a B.S. degree from Columbia University, he was granted an M.D. degree from the New York State University College of Medicine in 1953. He opened an office for the general practice of medicine in Colchester in July of 1954. There, with his wife, Bette, he raised a family of three children: a son, David, and two daughters, Judith and Ami. He managed to successfully merge full medical service to his community with devotion to his family and religion, and was beloved by all.

He served in the U.S. Navy 1945-46 and was a member of the Central Medical Society, and assistant attending physician at Middlesex Memorial Hospital. Dr. Israel was a member of the Middlesex County Medical Association, the Connecticut State Medical Society, and the American Medical Association.

Although Dr. Israel easily had the capability of climbing high on the ladder of medical prestige, he purposefully chose to serve the people of the town in which he lived and practiced. He was an extremely able physician who never failed to provide for the total needs of his patients—be that cure, relief from pain, or simple human comfort. The people of his community knew of his illness and of their future loss months before he died—and they suffered with him. And finally, on a cold grey afternoon in March, they closed their schools, shops and businesses and stood by the hundreds in silent tribute at the funeral of the man who gave to them all of the productive years of his life.

Andrew F. Turano, M.D.

In Memoriam

Gilday, James Lowry, Electic Medical College, 1913. Dr. Gilday was a general practitioner in the Bridgeport area prior to his retirement 15 years ago. He had been a 32nd degree Mason, a member of Ashlar Lodge, and the Lafayette Consistory. He was a member of the Fairfield County Medical Association and the Connecticut State Medical Society. Dr. Gilday died March 12, 1971, at the age of 83.

Raymer, John George, Harvard Medical School, 1930. Dr. Raymer was a senior surgeon at the W.W. Backus Hospital and a member of the American College of Surgeons. He served as a lieutenant commander in the Navy Medical Corps from 1943-1946. Dr. Raymer was also a member of the New London County Medical Association, the Connecticut State Medical Society and the American Medical Association. He died March 23, 1971, at the age of 69.

The Need for a Medical Ideology

(*JAMA*, 212: 2096, June 22, 1970) Ruby and Morganroth emphasize the need for a comprehensive medical ideology. They believe that every physician reserve unto himself as many hours as he needs to define at least the beginnings of his perception of what his profession is, what it aspires to be, and what it should be.

AROUND THE STATE

New Haven County

187th Annual Meeting—March 25, 1971

New Haven County Medical Association

The 187th Annual Meeting of the New Haven County Medical Association was held at the Waverly Inn in Cheshire on Thursday, March 25, 1971.

293 physicians were registered at the afternoon business meeting. 211 members and spouses enjoyed a roast beef dinner, Barber Shop Chorale and door prizes that evening.

A moment of silence was observed in the memory of the 8 deceased members since the last meeting. They were:

Thomas J. Affinito
1907-1970
Elizabeth B. Hinckley
1903-1970
Carl E. Johnson
1898-1970
Ralph W. Nichols
1887-1971
Edward A. Post
1907-1971
Jacob A. Saltzman
1905-1970
James G. Tynan
1916-1970
Fred Zerkowitz
1897-1970

Mrs. Boris Rifkin spoke as President of the New Haven County Medical Association Woman's Auxiliary. She reported a membership increase of 48, and described the programs and meetings held in 1970-71. The group provides a clipping service for the Association's Public Relations Committee and Mrs. Michael Wirth is on the Editorial Board of "Issues and Insight". Mrs. Rifkin made a plea for better physician attendance at the Burgundy Ball whose financial success was mostly due to the attendance of lay people.

Mrs. John J. Mendillo spoke as President of the Connecticut State Medical Society Women's Auxiliary. She reported a membership increase of 140, described her visits to the other five active Woman's Auxiliaries, and said the Legislative Committee was very active. Mrs. Mendillo stressed the Auxiliary scholarship, AMA-EMRF sales projects, drug abuse,

and eye-screening programs. She noted that Sweden's compulsory health program takes 20% of the income of Swedish tax payers.

Morris Granoff, M.D., President of the Connecticut State Medical Society, extended his greetings. He stressed health care delivery systems. Doctor Granoff urged that the people should "know what is being planned for them". "We always talk about 'informed consent' when surgical procedures are performed. I think now is the time for us to present the case to the people." He urged the advantages and disadvantages of all systems including the present system be clearly presented. Doctor Granoff urged that the best of private practice be preserved and improvements made in areas where private practice is falling short.

Bernard A. Burnham, M.D., reported 19 members of *COMPAC* attended the AMPAC Workshop in Washington, D.C. He urged all members to join *COMPAC* with their dollars and their participation.

Twenty-two new members were elected. They are: By Transfer from out of State Counties: Adolph J. Brink, New Haven; John C. VanGilder, New Haven. By initial direct application: Thomas T. Amatruda, Waterbury; Lawrence S. Cohen, New Haven; Jack W. Cole, New Haven; Earl H. Dearborn, West Haven; Jonathan M. Himmelhoch, New Haven; Victor W. Hurst, Waterbury; John Hyland, Hamden; Selby C. Jacobs, New Haven; David P. Johnson, Guilford; Chase P. Kimball, New Haven; Koretada Kondo, New Haven; Paul J. Myerson, Derby; Carlton R. Palm, New Haven; Lawrence T. Purcell, Meriden; Gaylord H. Rockwell, New Haven; Charles F. Roe, New Haven; Daniel C. Smith, New Haven; Robert P. Smith, Wallingford; George F. Thornton, West Haven; Kenneth H. Williams, New Haven.

Elections then were held. Those elected included James H. Root Jr., M.D. of Waterbury, President, John J. Mendillo, M.D. of New Haven, Vice President, and William L. West, M.D. of Derby, Clerk.

Elected to the Credentials and Orientation Committee was Allen R. Traurig, M.D. of Waterbury; to the Committee on State Legislation, Bernard A. Burnham, M.D. of Waterbury, and Anthony Piccirillo, M.D. of Wallingford.

Elected to the Board of Censors for 2 year terms were Doctors Samuel Climo, John Beeble, Daniel Kahn, Franklin Robinson, John M. Brogden, Charles D'Alessio and Gioacchino Parrella.

Elected to the Third Party Payments Committee for 1 year terms were Doctors Robert Boltax (Chairman), Hubert Bradburn, Allen Goodyer, Milton Jennes, Ely C. Wagshul and Joseph Fraknoi.

The 27 Delegates elected to the Connecticut State Medical Society were—East Shore: Anthony D. Mancini, East Haven; Richard Rosenthal, Branford; Meriden: Matthew Campione, Meriden; John Hennessey, Meriden; E. Stuart McCleary, Wallingford. Naugatuck Valley: Stewart J. Petrie, Derby; Raymond E. Bradley, Jr., Woodbridge; New Haven: John B. Atwater, New Haven; George Bonner, New Haven; Elliott S. Brand, New Haven; Louis W. Cappucci, New Haven; Samuel Climo, New Haven; John H. Flynn, New Haven; H. Robert Greenhouse, Hamden; Florence Keller, Woodbridge; James D. Kenney, New Haven; Saul S. Milles, New Haven; John Moench, New Haven; Howard Spiro, New Haven; Frederick H. Treder, Woodbridge. Waterbury: William Arnold Jr., Middlebury; Charles H. Audet Jr., Waterbury; Louis C. Backhus, Waterbury; Mehdi Eslami, Waterbury; Elliott Mayo, Waterbury. West Shore: Gioacchino Parrella, Milford; Robert Hurowitz, West Haven.

The 30 Alternate Delegates elected to the Connecticut State Medical Society were—East Shore: Allen H. Merman, Guilford; Marvin Zimmerman, Branford. Meriden: Michael Conroy, Meriden; Adolph Franz II, Meriden; Eli Wagshul, Meriden. Naugatuck Valley: Jack Holden, Derby; Donald Roach, Shelton. West Shore: Michael Dzuby, West Haven; John Milici, West Haven; Leonard Rapoport, Milford. Waterbury: Bernard A. Burnham, Waterbury; Morris Coshak, Waterbury; Milton Jennes, Waterbury; Jamil Karsh, Waterbury; Allen Traurig, Waterbury. New Haven: Hubert Bradburn, New Haven; Joseph A. Camilleri, New Haven; Mario G. Conte, New Haven; Arthur Ebbert, Jr. New Haven; James B. Fanning, North Haven; Saul Frankel, New Haven; Robert Hart, Hamden; Andrew Laudano, New Haven; Richard Lena, New Haven; Sherwin Nuland, New Haven; Ronald C. Savin, New Haven; Dominic Schioppo, New Haven; Gustave Sirot, New Haven; Eugene Serafin, New Haven; William E. Swift, New Haven.

The retiring president, Stewart J. Petrie, M.D., thanked the Association for its support during 1970-71, and in return the Association approved his report with commendation.

The incoming president, James H. Root Jr., M.D., outlined his 7 point program for 1971-72.

He stressed:

1. Health planning leadership.
2. Peer Review concept implementation with a goal that reasonable fees must be charged.
3. Cooperation with the Connecticut State Medical Society.
4. Town-Gown relationships including community hospital relationships.
5. Inter-county and intra-county relationships.
6. Membership information and participation.
7. Making Association Meetings More Meaningful.

A hotly debated issue was a by-law change calling for repeal of compulsory attendance. However, the motion to adopt the change was decisively rejected and compulsory attendance continues.

Another hotly debated issue was a resolution supporting Peer Review which calls for the Association to "expect that its members deliver high quality medical care and charge reasonable fees." It also calls for "the decision of (the) Peer Review Committee in matters of reasonable charges and utilization shall be binding on the member." The resolution was passed by a resounding majority and will be forwarded to the CSMS House of Delegates on April 27, 1971 for introduction.

A high-light of the afternoon was the presentation of a panel of seven (7) speakers who shared only 45 minutes of speaking time and left the audience thoroughly impressed with the excellence of their material. Those speaking and their topics were:

1. Dr. Saul Milles, New Haven—"The Yale and Community Physicians Coordinating Committee".
2. Dr. Bernard A. Burnham, Waterbury—"National Health Legislation".
3. Dr. Max Goldstein, Hartford—"Foundations".
4. Dr. Kurt Pelz, Wallingford—"Peer Review".
5. Dr. Saul Milles, New Haven—"Health Planning".
6. Dr. David Deren, Fairfield—"Malpractice".
7. Dr. William R. Richards, CSMS—"General Remarks".

At the dinner meeting President James H. Root Jr., M.D., presented the past-presidents' plaque to outgoing President Stewart J. Petrie, M.D.

Respectfully submitted,

William L. West, M.D. *Clerk*

MEETING NOTICES

The information on this "notices" page is offered as a service of all specialty groups and allied health agencies in order to publicize postgraduate educational opportunities available to subscribers. The deadline for publication in Connecticut Medicine is the tenth of the month preceding, date of issue. Send copy to: Connecticut State Medical Society, 160 St. Ronan Street, New Haven, Connecticut 06511.

GENERAL

May 26—Wednesday 1:4:30 P.M.

Symposium on Sickle Cell Anemia

Connecticut General Auditorium, Bloomfield

June 19-24

American Medical Association

1971 Annual Convention

Chalfonte-Haddon Hall

Atlantic City, New Jersey

June 19—Saturday

1:30 p.m.-5:00 p.m. Conference on JCAH Revised Standards

June 20—Sunday

9:00 a.m.-12 Noon. Conference of Presidents and Other Officers of State Medical Associations

2:00 p.m.-5:00 p.m. House of Delegates

8:00 p.m. Medicine and Religion Program

June 21—Monday

9:30 a.m.-5:00 p.m. Reference Committee Meetings

June 22—Tuesday

10:00 a.m.-5:00 p.m. House of Delegates

June 23—Wednesday

9:00 a.m.-3:30 p.m. House of Delegates

5:00 p.m.-6:00 p.m. Inaugural Ceremony

6:30 p.m.-8:00 p.m. President's Reception

June 24—Thursday

7:30 a.m.-9:00 a.m. Elections

9:00 a.m.-5:00 p.m. House of Delegates

ELECTROENCEPHALOGRAPHY

September 13-15—Monday-Wednesday

Clinical Electroencephalography

Minneapolis, Minnesota

Contact: American EEG Society, Dr. D. W. Klass,
Mayo Clinic, Rochester, Minnesota 55901.

INTERNAL MEDICINE AND SURGERY

September 15-June 1—Tuesday

Lecture Series: "Medical Emergencies"

Lawrence and Memorial Hospitals

New London, Connecticut

Contact: Edward Gipstein, M.D., Director of Medical Education. (442-0711 ext. 361).

June 7-11—Monday-Friday

Clinical Problems—1971

University of Cincinnati

Contact: American College of Physicians, 4200 Pine Street, Philadelphia, Pennsylvania 19104.

ONCOLOGY

Series of Lectures: St. Raphael's Hospital, New Haven:

Thursdays at 12 noon

May 20—Myeloproliferative Syndromes

Rose Papac, M.D.

May 27—Case Presentation

June 3—Lysozyme in Leukemia

Oswaldo Castro, M.D.

June 10—Case Presentation

PSYCHIATRY

Series of Lectures at Connecticut Valley Hospital, Middletown:

May 21—Friday

2:00 P.M.

"Recent Developments in Our Understanding of Physical Dependence Produced by Addictive Agents"—Arnold J. Friedhoff, M.D.

June 8—Tuesday

10:30 A.M.

"The Psychiatric Hospital: Status, Use and Abuse"—John H. Houck, M.D.

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Connecticut Medicine

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Connecticut Medicine

Connecticut State
Medical Journal

Volume 35/June 1971/Number 6

LEAD AND THE ENVIRONMENT: I.

Martha Lepow, M.D. and Thomas Dolan, M.D., Guest Editors

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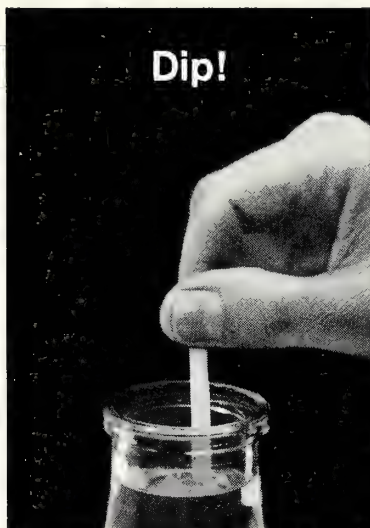


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Mallard Duck with Wing Drop

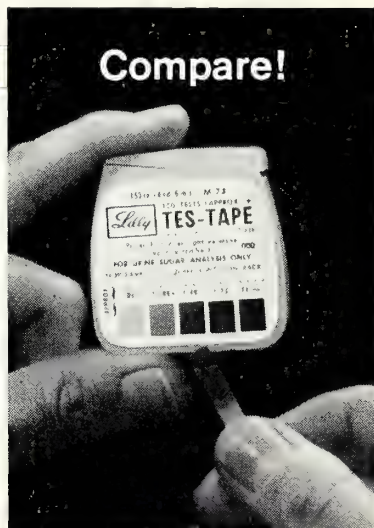
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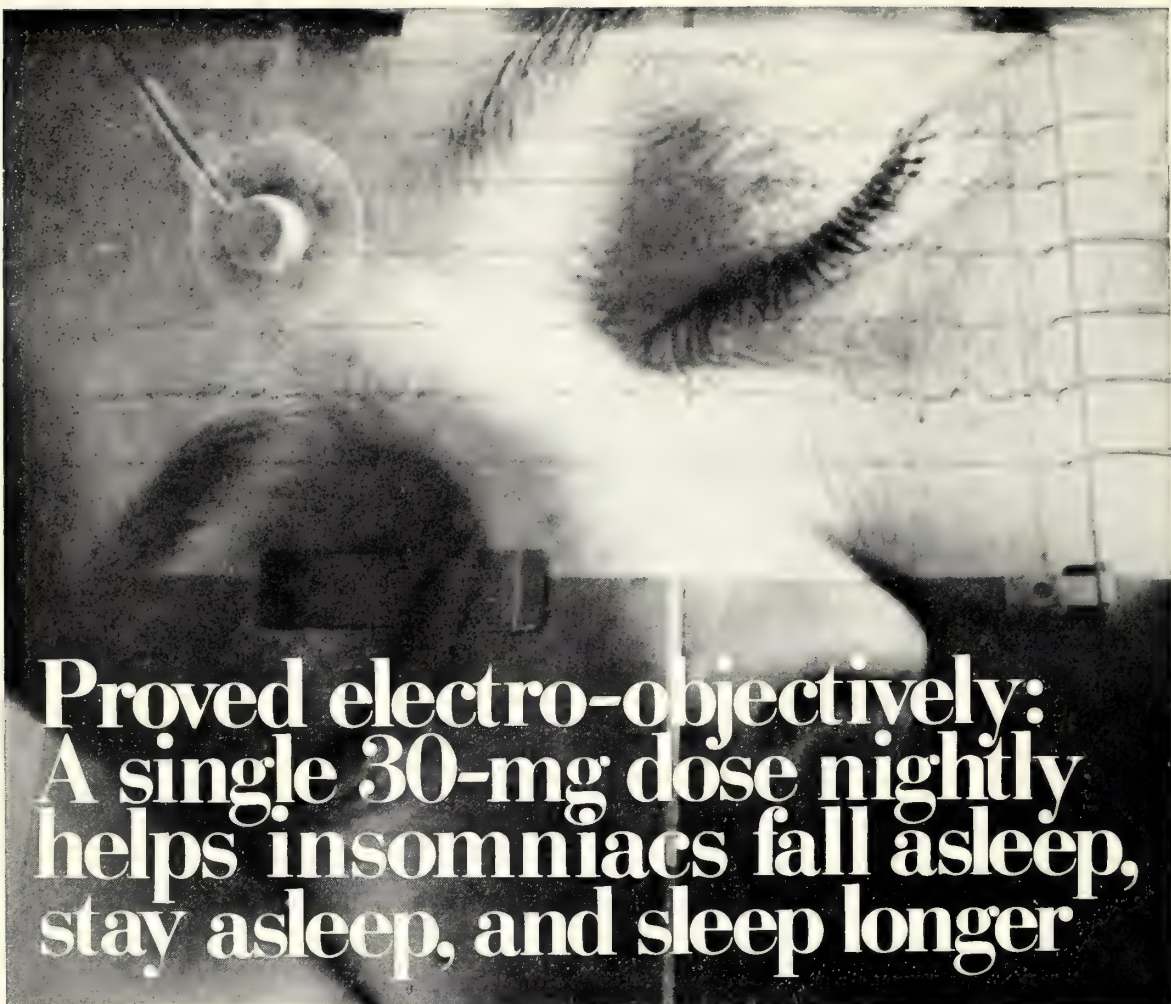
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Fifty-three controlled studies using a paired-night, double-blind crossover design have evaluated Dalmane clinically. In the majority of these, Dalmane (flurazepam HCl) significantly reduced sleep induction time and increased sleep duration. Dalmane and a placebo were alternated on successive nights in 2010 insomniacs, 1706 of whom were studied for a single night-pair, and the remainder for as many as fifteen paired-nights. A patient preference for Dalmane was apparent in the paired-night studies.

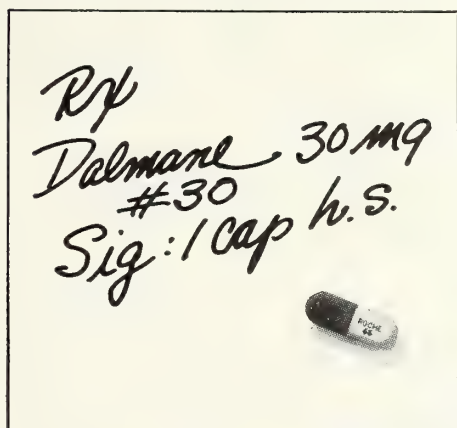
Dalmane was also preferred to certain hypnotics in two separate preference studies. In each of two double-blind studies, Dalmane 30 mg retained effectiveness for the total period of seven consecutive treatment nights, according to subjective/objective evaluations.

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References: 1. Kales, A., et al.: "Effectiveness of Sleep Medications: All-Night EEG Studies of Hypnotic Drugs," in Proc. 7th Internat. Cong. Electroencephal. and Clin. Neurophysiol., San Diego, Calif., Sept. 13-19, 1969. 2. Kales, A., et al.: "Psychophysiological and Biochemical Changes Following Use and Withdrawal of Hypnotics," in Kales, A. (ed): *Sleep: Physiology and Pathology*, Phila., Lippincott, 1969, p. 331. 3. Data on file, Medical Department, Hoffmann-La Roche Inc.



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Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. Caution against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Use in women who are or may become pregnant only when potential benefits have been weighed against possible hazards. Not recommended for use in persons under 15 years of age. Though physical and psychological dependence have not been reported on recommended doses, use caution in administering to addiction-prone individuals or those who might increase dosage.

Precautions: In elderly and debilitated, initial dosage should be limited to 15 mg to preclude oversedation, dizziness and/or ataxia. If combined with other drugs having hypnotic or CNS-depressant effects, consider potential additive effects. Employ usual precautions in patients who are severely depressed, or with latent depression or suicidal tendencies. Periodic blood counts and liver and kidney function tests are advised during repeated therapy. Observe usual precautions in presence of impaired renal or hepatic function.

Adverse Reactions: Dizziness, drowsiness, lightheadedness, staggering, ataxia and falling have occurred, particularly in elderly or debilitated patients. Severe sedation, lethargy, disorientation and coma, probably indicative of drug intolerance or overdose, have been reported. Also reported were headache, heartburn, upset stomach, nausea, vomiting, diarrhea, constipation, GI pain, nervousness, talkativeness, apprehension, irritability, weakness, palpitations, chest pains, body and joint pains and GU complaints. There have also been rare occurrences of sweating, flushes, difficulty in focusing, blurred vision, burning eyes, faintness, hypotension, shortness of breath, pruritus, skin rash, dry mouth, bitter taste, excessive salivation, anorexia, euphoria, depression, slurred speech, confusion, restlessness, hallucinations and elevated SGOT, SGPT, total and direct bilirubins and alkaline phosphatase. Paradoxical reactions, e.g., excitement, stimulation and hyperactivity, have also been reported in rare instances.



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(This is the first of a two-part series on lead poisoning).

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Subscription rate for non-members \$15.00; Student-Members, interns and residents \$7.50; single copy \$1.50.

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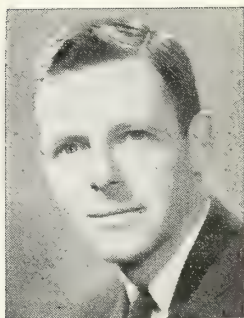
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PRESIDENT'S PAGE



I would like to take up the question, "What does C.S.M.S. do for me?" I think that the accomplishments of the House of Delegates at the annual meeting in Hartford on April 27 provide an excellent answer to the question. The foremost action taken was the acceptance of the basic principles for a proposed professional liability insurance program for the members of C.S.M.S. Whereas the "crisis" in liability insurance may have touched relatively few Connecticut physicians, for those whose policies have been cancelled it is a serious matter. This insurance program is timely and forward looking. It should be available to the membership in October. Among other provisions it establishes a Review Committee which, it is hoped, will reduce nuisance claims. Worked out by a committee of doctors and the insurance company, with the help of insurance consultants who have successfully introduced other similar programs, it gives every indication of becoming a material benefit available to every member.

Another action taken was the adoption of a new Relative Value Scale, revised and up-dated to bring the 1969 California RV Studies into line with current local practice. This may prove to be essential in setting up a Foundation for Medical Care, or in meeting the needs of the members in dealing with various third party payors, or in developing payment schedules that may be required as a result of national legislation.

An important principle was adopted when the House voted to support the concept of continuing medical education as a criterion for continued membership in the state society and component county associations. The details regarding the amount and kind of continuing education are to be worked out by the Committee on Postgraduate Education.

A proposal to make an educational grant to COMPAC was given careful consideration, and it was again decided to allocate political education funds to the Committee on Public Affairs. This Committee, in cooperation with the COMPAC Board of Directors, has the responsibility for impressing upon the membership the necessity for political involvement by physicians. This is a big task. It is vital to an understanding of the PAC concept and to the success of any legislative program the Society has or may have in the future. We can not fail to have such a program in the face of all the health and medical care oriented bills before the legislature this year and in the foreseeable future.

There were many other actions taken by the House but those outlined above, I believe, affect the practicing physician directly and personally. The delegates are to be commended for a very successful meeting.

Frederick C. Weber, Jr., M.D.

Foreword

In December, 1970, a Symposium—LEAD AND YOUR ENVIRONMENT—was held in Hartford. Sponsored by the Department of Pediatrics at Yale University School of Medicine and the University of Connecticut School of Medicine, the Connecticut Air Conservation Committee, and the State Health Department, the conference faced the problems created by lead in our environment and its effect upon the quality of our lives.

International authorities stressed the need for purposeful action. Dr. Clair Patterson, geophysicist, spoke of the progressive increase of lead on the surface of the earth and in the atmosphere; Dr. Lars Karstad, animal pathologist, described the devastating effect on waterfowl of lead shot accumulating in our ponds since the days of our forefathers; Dr. Julian Chisolm, pediatrician, summarized the current status of knowledge on the biologic effects of lead on man; Dr. Gordon Stopps, industrial physician, spoke of the striving of industry to minimize its hazards to labor.

Papers on the complex biosocial problem of lead poisoning in young children were presented by Dr. William Ullman of the Connecticut State Department of Health, faculty and students from Yale and the University of Connecticut, and Dr. George Bowers, Hartford Hospital.

The final speaker, State Representative Robert Oliver, discussed legislation designed to bring the widespread problem of childhood lead poisoning under control—the outgrowth of a year of hard work by a Task Force on Lead appointed by Governor Dempsey in 1969.

We feel that the manuscripts in this issue represent a significant contribution to our knowledge of lead in the environment. Perhaps they will help us define the means of prevention more clearly.

We would like to thank the contributors for their cooperation in participating in the conference and in preparing this material for publication. We are proud to have had the opportunity to work with them.

Martha Lepow, M.D. and Thomas Dolan, M.D. *Guest Editors*

Lead In The Environment

Clair C. Patterson, Ph.D.

Major changes in the course of hominid genetic evolution during the past several million years have been associated with important environmental crises. In the past, the causative factor seems to have been glacial cycles. For example, climatic changes, the rise of seas, and shifts in populations of flora and fauna which accompanied the retreat of the great Illinoian glaciers about 200,000 years ago (figure 1) probably had something to do with initiating the appearance and widespread dispersal of *Homo sapiens neanderthalensis* over North Africa, Southwest Asia, and Europe. A similar advance of the worldwide Wisconsin glaciers (figure 1) likewise probably influenced the disappearance of *sapiens neanderthalensis* and the appearance of *Homo sapiens sapiens*. In the last two decades a large amount of evidence and interpretation has accumulated which clearly shows that the environmental crises caused by the retreat of the worldwide Wisconsin glaciers (figure 1) brought about the appearance of sedentary agriculturists and husbandrymen who developed, during the past 12,000 years, our civilizations.

Today a new factor operating to the same ends by changing the environment, but proceeding by different means, seems to have been forged out of the biosphere's endless searching along new paths of technological evolution, and that is engineering technology. The effect of engineering technology on the evolution of hominids cannot be predicted in detail now, but it seems evident that it will bring about the demise of *sapiens sapiens*, probably through manipulation of germ plasm and the manufacture of living brain tissue by hominines to create socio-organic entities consisting of clusters of modified hominines centering their actions about massive brains. Such "organs" and "tissues" of these entities would be dependently linked by nutrient-sensation-reward-relations.

Lead is useful for tracing this anatomy of our demise because it can be readily studied, because it was used by men throughout the last half of the post-Wisconsin urban civilization era, when the

quiet gestation of engineering technology was difficult to perceive, and because its use was simply and directly related to a number of factors and activities that were important to the genesis of engineering technology.

Lead was first used about 2500 BC, at the beginning of the cupellation stage of metallurgy in Southwest Asia. By that time men were mining and smelting metal ores and they were well acquainted with the remarkable utility of bronze and the value of gold. In their attempts to smelt useful bronzes from different, abundant ores, they had finally discovered that small amounts of silver could be parted (cupelled) from lead metal which had been first smelted from lead ores. Previously, native silver had been much rarer than gold, and perhaps more esteemed. Traces of silver occur commonly in galena, an abundant lead sulfide ore, and silver production from lead ores boomed after 2500 BC. About four hundred tons of lead in oxide form were produced for every ton of silver obtained by cupellation. Lead oxide was easily converted to metal again by reduction with charcoal. With the advent of coinage in 650 BC, silver became a key-stone in the founding and operation of successive civilizations and lead production rose sharply.

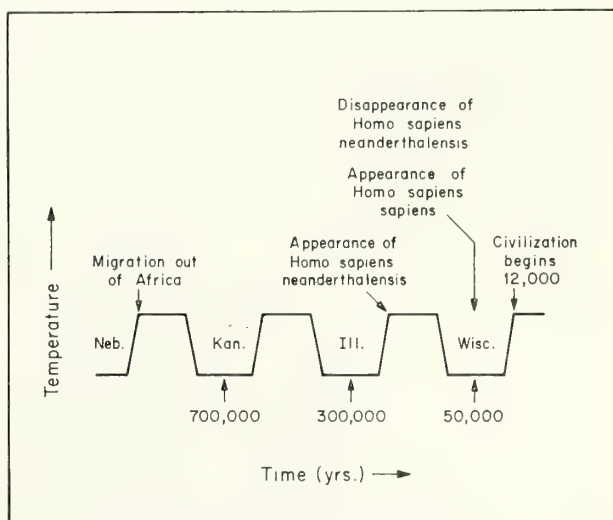


Figure 1

Worldwide glacial pulses. Such unstable climatic fluctuations have been rare in the past 1,000,000,000 years. It was uniformly warm and mild during most of that period.

DR. CLAIR C. PATTERSON, Senior Research Fellow in Geochemistry Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, California.
(Contribution number 1954).

During the two millenia beginning with the cupellation of silver from lead ores and ending with the commencement of coinage, men found a multitude of uses for the huge piles of lead that began to accumulate. By Classic Greek times water was being collected from lead-covered roofs, and transported through lead metal gutters to lead-lined cisterns. Stone building blocks were being held together with iron clamps embedded in lead metal that had been poured into holes drilled in the stone. Ships were being sheathed with lead metal to repel wood-worms. Salves, ointments, cosmetics, and paints were being made of lead compounds. Grape sugars boiled down in lead pots, were being added to wines to keep them from souring¹. Lead-tin alloys were being widely used to line the inside of bronze utensils to keep copper out of foods and liquids.

Silver recovered from lead ores had a short life due to irrecoverable loss when circulating, and this factor may have been instrumental in bringing about the decline of the Roman Empire and initiating the Dark Ages in Europe. On the basis of geological and archaeological evidence and of mine production since 1800 AD for regions within the former Roman Republic and Empire, it is estimated that world silver production (essentially Roman) reached a maximum rate of about 170 tons per year at about 50 AD. Estimates can be made of the degrees of exhaustion of the lead-silver mines achieved by the Romans by comparing the depths of Roman working below the water tables in the ore deposits with the total extent of ore lodes revealed by recent mining operations. It appears that the Romans exhausted, for most practical purposes within their engineering and business capabilities, *all* the lead-silver deposits lying within the boundaries of their Empire. From a physical point of view (dated artifacts, uncertainty in degree of exhaustion, and uncertainty in production levels), the data when this occurred is uncertain within a century or so, but judging from historical evidence, it probably came at about 200 AD. Lead ore exhaustion probably was the major cause of declining silver production after that date, although the occurrence, virtually without respite during the 3rd century AD, of general anarchy and invasions within the Empire did have an adverse effect.

It is likely that the following chain of events helped in the disintegration of the Empire: the building of an economy based on the mobile exchange of silver money; lead-silver ore exhaustion; reduced silver production; reduced silver stocks

because of irrecoverable loss; and economic chaos following upon the significant disappearance of silver. The rise and fall of Classic Greek civilization from 650 BC to 350 BC is linked in a similar manner to the Laurion lead mines of Attica.

Lead's link to the cores of post-Wisconsin urban civilizations by means of silver is not the only aspect of its relationship to the gestation of engineering technology. Lead is the most ancient, important environmental poison created by man. Many hundreds of millions of people have been affected by its toxicity during the last 4500 years, either as mining slaves, as consumers of adulterated wine and food, or as mere breathers of urban air. The magnitude of lead's toxic effect upon humanity is related to gross production. The industrial use of lead in the world reached a monumental plateau during the 1st and 2nd centuries of the Christian era. In Italy, the annual industrial use at the time amounted to nearly 0.004 ton of lead/person/year, which approximated the 0.01 ton of lead/person/year industrially used in the United States two thousand years later. World lead production declined precipitously with the fall of Rome, and then remained at a low ebb during the following six centuries. Production again began to climb slowly in Europe after the 9th century AD, when most lead mining activities shifted from holdings in the declining Byzantine Empire to virgin deposits operated by free entrepreneurs in central Europe. During the late Renaissance, world lead production finally reached the former mighty levels achieved by the Romans, after entire Indian nations became enslaved in the lead mines of Peru and Mexico. Beginning with the Industrial Revolution, world lead production climbed exponentially from 100,000 tons/yr in 1750 to 3,500,000 tons/yr in 1966. Curves illustrating the rise of world lead production with time since the Industrial Revolution are shown in figure 2.

Industrial lead enters the oceans via rivers and by atmospheric washout. Contributions from both routes have changed with time: gradually increasing during past centuries, with pollution from the atmosphere increasing abruptly during the last two decades as a consequence of a sudden growth in the rate of burning of leaded automotive fuels. The industrial use of lead is so massive today that the amount of lead mined and introduced into our relatively small urban environment each year is more than 100 times greater than the amount of natural lead leached each year from soil by streams and added to the oceans over the entire earth.

Measurements of lead in oceanic sediments and their rates of accumulation show that 1.3×10^{10} gm of dissolved lead entered the oceans per year several million years ago, while measurements of lead in rivers show that some 2.4×10^{11} gm of dissolved lead now enters the oceans. This industrial lead, plus that washed out of the air, causes high concen-

thus depleting the upper layers. In recent decades the massive introduction of industrial lead has swamped out this natural distribution.

The atmospheric entry of industrial lead to the seas is important today because very large amounts of lead are now burned in gasoline. This practice first began in 1924, and if it serves as an important means of introducing lead into the oceans, lead concentrations should have increased markedly in the atmosphere of the northern hemisphere after 1924. This was shown to occur by measuring increases in concentrations of lead in annual layers of snow in northern Greenland (figure 5). Concentrations of sea salts and silicate dusts did not

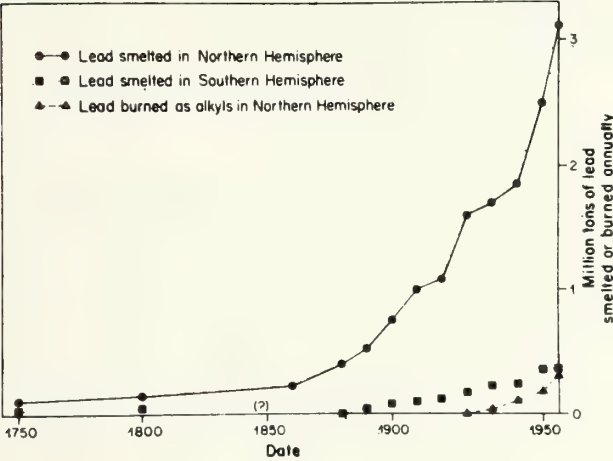


Figure 2
World lead smelter and lead alkyl production since 1750 AD. Data from Murozumi et al².

trations to occur in the upper, young layers of the oceans, which exceed those in the deep, ancient waters (figure 3).

This relationship is contrary to observations for other trace metals related to lead, such as barium (figure 4), where the natural distribution is controlled by organisms ingesting the metals in the upper layers, falling directly to the ocean floor, and

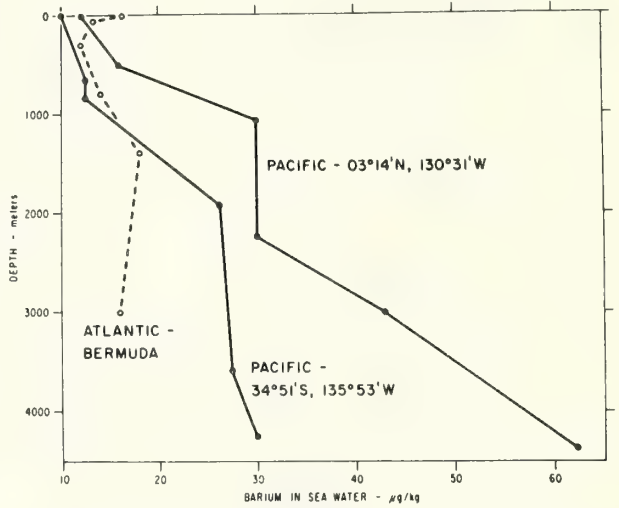


Figure 4
Barium concentration profiles in the oceans. From Chow and Patterson³.

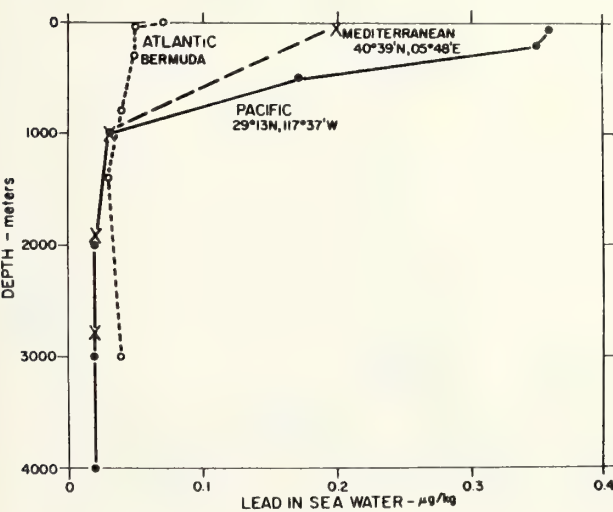


Figure 3
Lead concentration profiles in the oceans. From Chow and Patterson³.

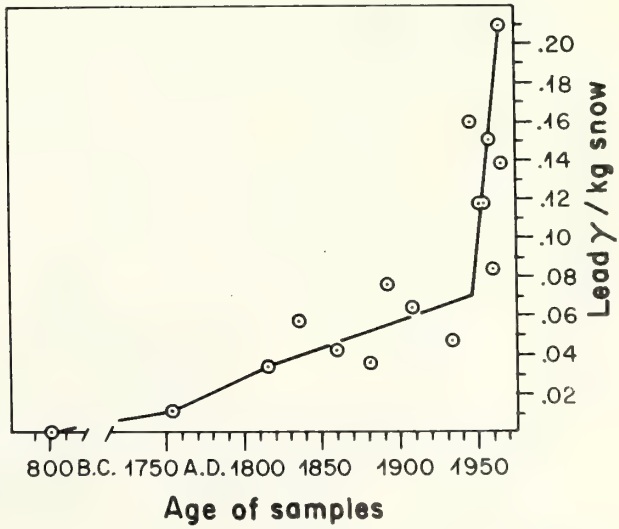


Figure 5
Lead concentration profile in snow strata of northern Greenland. From Murozumi et al².

change appreciably with time in the snow layers, and natural lead contributed by these materials amounted to about $0.0004 \gamma \text{ Pb/kg snow}$. At 800 BC, the analytical lead blank of $0.003 \gamma \text{ Pb/kg snow}$ exceeded natural lead levels in the snow. At the beginning of the Industrial Revolution in 1750 AD, however, industrial lead concentrations had risen to about 25 times above natural levels, and this effect could be observed. By 1940 industrial lead concentrations had climbed to 175 times above natural levels. After 1940 industrial lead rose abruptly over a short interval to 500 times above natural levels. Material balance considerations indicate that this lead, deposited in Arctic regions, comprises about 1% of the leaded exhaust emissions from automobiles at temperate latitudes.

The concentration of lead in the atmosphere varies according to how close one comes to the sources, which are the cities. The approximate concentrations (in micrograms per cubic meter) are, successively: north polar regions $<.0005$; central ocean regions $.001$; U.S. countrysides $.05$; and U.S. cities 2.

Ventilation within cities is determined by horizontal air currents beneath inversion layer ceilings. These ceilings are elevated in the summer and are lowered in the winter, so urban atmospheric lead concentrations are higher in the winter because the volume of the city air chamber is smaller. This effect is shown in figure 6, where the cyclic rise and fall of lead over four winters in San Diego air is shown. Concentrations vary by about a factor of 4.

Most of the lead emitted as automobile exhaust consists of small, long-lived aerosols, but a portion is made up of very large particles that fall out al-

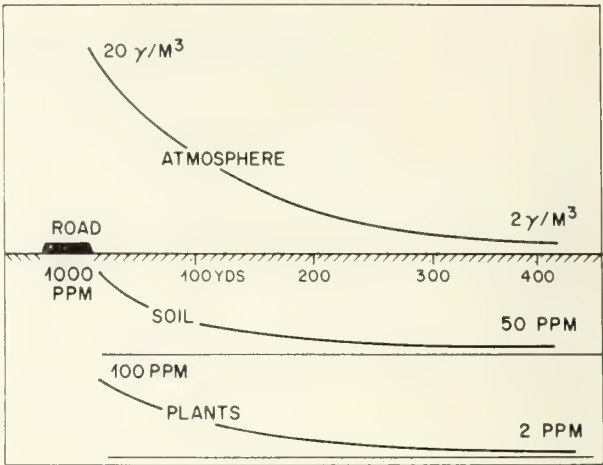


Figure 7
Lead concentrations in air, soil, and plants adjacent to a highway. Data summarized from Chow⁵ and Motto et al.⁶

most immediately along roadsides. Figure 7 shows that lead concentrations in soil decrease by more than a factor of ten within about 400 meters of the road. Similar decreases in the lead contents of grasses and foliage are also observed. Ventilation reduces atmospheric lead concentrations to ambient levels within about the same distance. These characteristics are important in considering the effects upon children in schools located near freeways and upon food crops grown near highways.

It can be shown by material balance considerations that about 99% of the lead in urban atmospheres originates from automobile fuel, but isotopic tracer techniques illustrate the matter more simply and directly. Figure 8 shows the close correlation between the isotopic compositions of leads used in

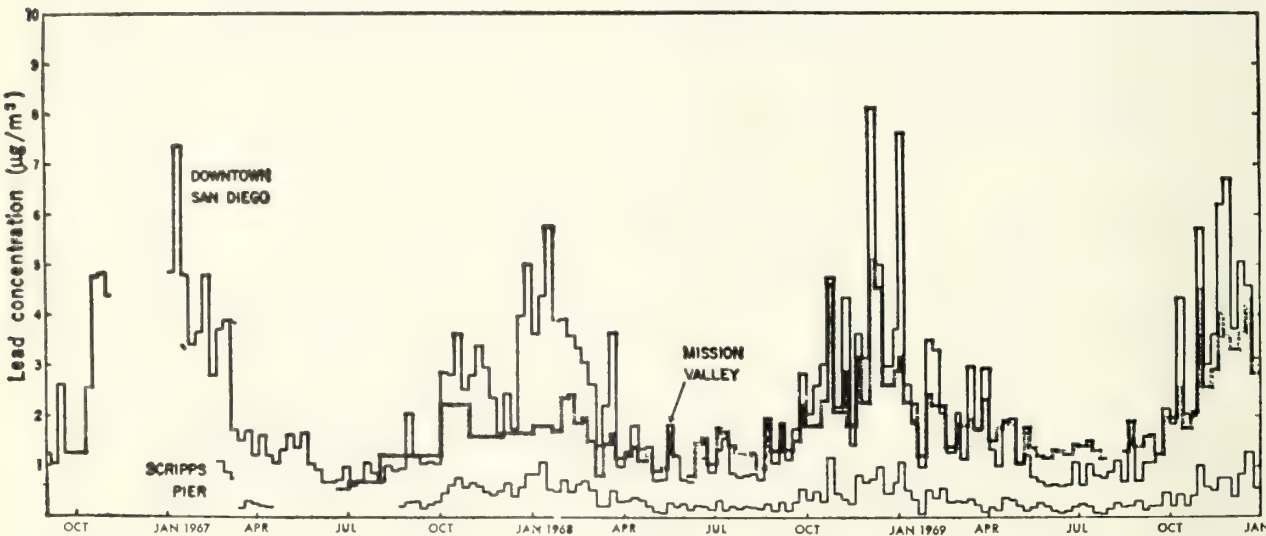


Figure 6
Concentrations of lead in the air near San Diego, California. From Chow and Earl⁴.

gasoline in various cities of the world and of leads found in the atmospheres or soils of those cities. Leads from different mines have different isotopic compositions, and these different leads are used at various locations.

Principal aspects of the pathways of lead through the human body are shown in figure 9. Typically, more than a third of the lead entering the main bloodstream originates from leaded gasolines. Much of this lead is excreted in the urine, but a part is stored in bone, where it comprises about 90% of the body burden. About 1% of the lead in the bone bank is in contact with the main bloodstream at all times and can be withdrawn to affect soft tissue.

It is observed that barium, a toxic, trace heavy metal in the calcium family of metals is rejected by plants and animals along successive steps in the food chain so that calcium in higher animals contains only one three-hundredth of the barium originally existing in soil calcium (table 1). The chemical properties of lead are so similar to barium

in many ways that it may also be considered for some purposes a toxic, trace heavy metal member of the calcium family of metals. It is observed that calcium in the bodies of typical lead polluted Americans contains about the same proportion of lead as does calcium in soil. On the other hand, in conformity with the barium picture, it is observed that other toxic, trace heavy metals which are not used in such large quantities as lead is in the U.S.A., such as mercury and thallium, are one-hundred times less abundant in body calcium of Americans than in soil calcium. This hundred-fold discordant increase of the body burden of lead in contaminated Americans above inferred natural levels in humans is much larger than probable errors in our theoretical views on the geochemical distribution of metals in the biosphere. The absolute quantities of industrial lead contamination required to produce this effect are very small and material balance calculations show that it can readily be accounted for as tiny fractions lost from various large sources of industrial lead in our urban environments.

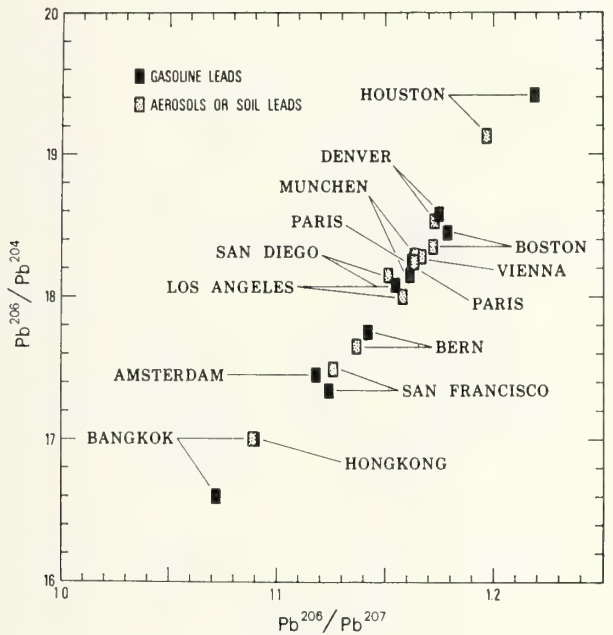


Figure 8
Correlations between the isotopic compositions of leads in gasolines with leads in local air and soil. From Chow⁷.

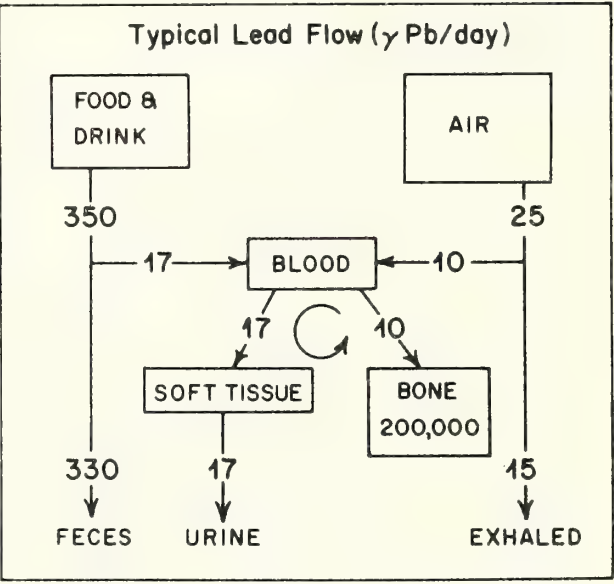


Figure 9
Principal pathways of ingested lead in the body with material balance data.

TABLE 1
ALKALINE EARTH METALS AND LEAD IN MAN AND HIS ENVIRONMENTS
(PARTS OF METAL PER MILLION PARTS OF CALCIUM).*

Metal	Atomic Weight	Earth's Crust	Terrestrial Plants	Man's Diet	Mg Metal/70 Kg Man
Ca	40	1,000,000	1,000,000	1,000,000	1,000,000
Sr	88	7,400	3,000	1,500	300
Ba	137	7,400	1,100	430	22
Pb	207	550			200**
(Estimated natural Pb levels)			80	30	2

*—From Patterson⁸. **—Observed typical value.

These observations suggest that the body burdens of lead in typical urban dwellers today are several orders of magnitude above natural levels. The exposure of humans to such severe chronic lead insult probably has deleterious effects. Figure 10 shows that δ -aminolevulinic acid dehydrase, which catalyzes the formation of porphobilinogen from δ -aminolevulinic acid, is inhibited at all ranges of lead exposure in the red blood cell. It is doubtful that there is a threshold for damage, and it is believed instead that damage to humans, especially to the central nervous system, is more or less proportional to the degree of exposure.

Unfortunately, learning of these matters does not automatically lead to their cure because of the conflict of public and private interests that are involved. The pollution of man's environment on a worldwide scale by industrial lead has been proceeding virtually unnoticed and unchallenged for thousands of years and with an intensity which has been increasing exponentially during the last two centuries. The major factor which allowed

this to happen was the simultaneous development in medicine, during the nineteenth century, of the useful and humane concept of occupational health hazard together with knowledge of the toxicity of lead. This prevented the recognition of lead as one of the first great environmental poisons because lead poisoning was relegated to the category of an occupational health hazard which seemed amenable to cure by proper care during the industrial production and manufacture of leaded materials. The seriousness of the problem of environmental pollution by industrial lead was made known recently and since that time the subject has received wide recognition, but not much has actually been accomplished, because of the massive opposition by lead producing and consuming industries to any attempts to curb the industrial production and use of lead.

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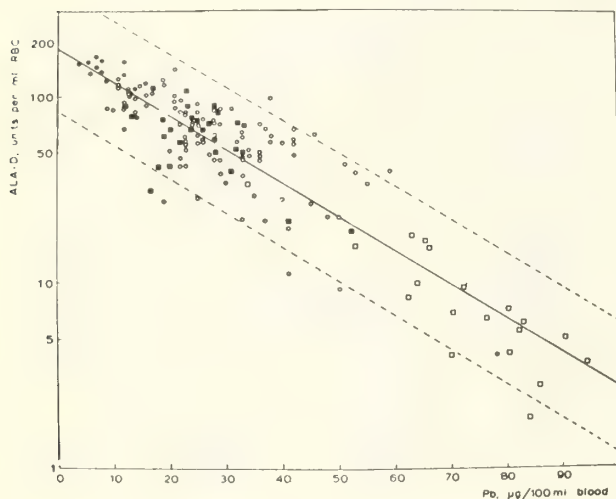


Figure 10

Relationship between blood lead levels (exposure to lead contamination) and reduction of δ -ALA dehydrase activity. After Hernberg et al⁹.

Adverse Effects of Inorganic Lead Salts as Related To Various Levels of Absorption of Lead

J. Julian Chisolm, Jr., M.D.

At the Symposium on Lead in Your Environment, J. Julian Chisolm, Jr., M.D., an authority on adverse effects of lead in man, gave a highly informative presentation on the biology of lead poisoning. Doctor Chisolm has provided me with a detailed discussion of the present status of our knowledge of the adverse effects of lead in the human body and has given permission for condensation for this special issue of *Connecticut Medicine*. Quotations from Doctor Chisolm are so designated.

In man, the excessive lead absorption particularly affects the biosynthesis of heme and certain functions of kidney and brain. Metabolic effects of lead on heme synthesis are reversible when excessive exposure is eliminated, but this is not always the case when there is functional injury to the kidney and/or CNS.

Blood lead concentration reflects recent and current absorption of lead; the various adverse effects of lead are associated with progressive increments in the levels of lead in the blood. The greater the degree and duration of exposure, the greater the risk of permanent renal or CNS damage.

Chisolm has provided us with a schematic summary of the levels of lead in blood and urine and the types of effects which might be expected at those levels in Table 1. "These 'levels of effect' may be divided into five general groupings, ranging from 'no demonstrable effect' (Level I) to the 'late effects of chronic or recurrent lead poisoning' (Level V). Levels I to IV reflect progressive increments in

the level of current and recent absorption of lead. Each level of effect may be discussed with respect to the significance of the type of effect upon human health."

When the blood lead level is less than 40 μg (Level I), no metabolic change is demonstrable in vivo. In vitro, it has been shown that delta-aminolevulinic acid dehydrase (ALAD) activity decreases with blood lead levels in the range of 5-95 $\mu\text{g}/100\text{ mg}^1$. The in vivo relevance of this finding remains to be determined. When ALAD is sufficiently inhibited in vivo, the consequence is accumulation and increased excretion of its substrate delta-aminolevulinic acid (ALA) (Level II). Although increased output of ALA may occur with blood lead levels between 40-60 $\mu\text{g}/100\text{ ml}^2$, there is usually no other demonstrable metabolic effect in this range.

When blood lead levels increase beyond 60 $\mu\text{g}/100\text{ ml}$, the effect on ALA varies among individuals. However, when blood lead levels reach 80-90 $\mu\text{g}/100\text{ ml}$, ALA will nearly always be increased in the urine³. There may well be other effects upon the red cell as is shown under Level III in the table. Rarely are any specific disturbances of the CNS or kidney recognized until the blood lead level exceeds 80 $\mu\text{g}/100\text{ ml}$.

Acute lead poisoning (Level IV) usually does not occur until the blood lead level exceeds 80 μg and may not occur until a much higher level is reached. In the pediatric age group, the most important syndrome of acute lead poisoning is acute encephalopathy. Discussion of the more chronic aspects in adults is beyond the scope of this paper. The course of acute encephalopathy may be gradual or fulminating, but early recognition is vitally important so that exposure can be interrupted and treatment instituted. Clinical signs and symptoms

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Discussion by: MARTHA LEPOW, M.D. Associate Professor, Department of Pediatrics, University of Connecticut School of Medicine.

LEVELS AND TYPES OF EFFECTS OF INORGANIC LEAD SALTS
AS RELATED TO ESTIMATES OF VARIOUS LEVELS OF ABSORPTION

LEVELS

EFFECTS	I	II	III	IV		V
	No demonstrable in vivo effect	Minimal subclinical metabolic effect	Compensatory biologic mechanisms invoked	Acute lead poisoning Mild	Severe	Late effects of chronic or recurrent acute lead poisoning
A Metabolic Effects: (accumulation and excretion of heme precursors)	normal	slight increase in urinary ALA may be present	progressive increase in ALA, UCP, FEP	increased 5 to 100 fold		increased if excessive exposure recent, but may not be increased if excessive exposure remote
B Functional Injury:						
1. Hematopoiesis	none	none	shortened RBC life span, reticulocytosis (±) (reversible)	shortened RBC life span and reticulocytosis with or without anemia (reversible)		anemia (±) (reversible)
2. Kidney (renal tubular function)	none	none	?	aminoaciduria, glycosuria (±) (reversible)	Fanconi syndrome (reversible)	chronic nephropathy (permanent)
3. Central Nervous System	none	none	?	mild injury (? reversible)	severe injury (permanent)	severe injury (permanent)
4. Peripheral Nerves	none	none	?	rare	rare	impaired conduction (wrist, foot drop usually improve slowly but may be permanent)
C. Clinical Effects	none	none	non-specific mild symptoms (may be due in part to coexisting diseases)	colic, irritability, vomiting	ataxia, stupor, coma, convulsions	mental deficiency (may be profound), seizure disorder, renal insufficiency (gout) (permanent)

Index of Level of Recent or Current
Absorption (and Exposure)

Blood Lead
($\mu\text{g Pb}/100\text{ gm}$
whole blood)

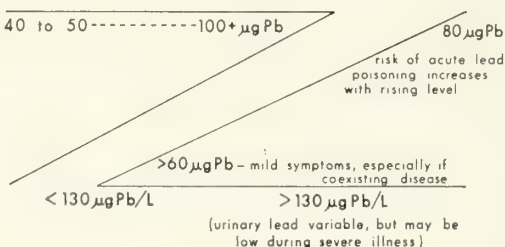
40 $\mu\text{g Pb}$

40-60 $\mu\text{g Pb}$

Urine Lead
(Adults only)
($\mu\text{g Pb}/\text{L}$)

< 80 $\mu\text{g Pb}/\text{L}$

40 to 50-----100+ $\mu\text{g Pb}$



blood and urine lead levels
may not be elevated if
excessive exposure remote:
diagnosis may be confirmed
by bone Pb analysis, 4 day
CaEDTA mobilization test.

may be non-specific. Clinical diagnosis depends on a high index of suspicion and performance of laboratory tests including blood lead concentration and demonstrating adverse metabolic effects in the form of increased output of ALA and coproporphyrin⁴. A high percentage of survivors of acute encephalopathy suffer permanent brain damage. Acute encephalopathy may be accompanied by urinary aminoaciduria, melituria, and hyperphosphaturia. By far the most common cause of encephalopathy in young children is ingestion of old lead pigment paint chips by children with pica. It is estimated that 1-3 months is the minimal period of ingestion of heavily leaded paint required to produce encephalopathy. Burning of discarded battery casings for heat and contamination of beverages by improperly lead-glazed earthenware containers are other less common etiologic factors.

Level V encompasses a number of symptoms lumped together under chronic behavior disturbances which has been termed chronic encephalopathy. It may be related to long continued excessive absorption of lead. Blood lead levels may be elevated. There may be lead lines in the bones.

The syndrome may also occur as a result of recurrent bouts of acute encephalopathy.

The treatment of lead poisoning consists of chelation therapy and removal of the hazardous source to prevent further exposure. The rationale for chelation therapy and current regimens are well described elsewhere.⁴ Chisolm has reported that "quantitative excretion of certain heme precursors in the urine apparently provide the best index of the 'metabolically active lead' in tissues. Prompt administration of adequate doses of chelants promptly suppresses these indices of adverse metabolic effects."

Although chelation therapy for acute encephalopathy may be life saving, it is probable that the type of therapy in acute encephalopathy has little bearing on the severity of permanent CNS injury⁵. Thus, there may well be a rationale for use of chelation therapy for prevention.

Once a child has suffered a serious metabolic insult such as lead poisoning, he should never be returned to a lead-contaminated house. In order to achieve this goal, an interdisciplinary approach of physicians, social workers and public health author-

ities is required. Baltimore has a unique municipal housing code which is enforced. There is also a convalescent facility in the community where the affected children may be sent until their dwelling units can be made safe.

The prevalence of subclinical lead poisoning among young inhabitants of old substandard housing is not known. Mean blood lead levels of inner city children in several communities has been shown to be between 40 and 50 $\mu\text{g}/\%$,⁶ considerably higher than the mean for urban populations which still is less than 30 $\mu\text{g}/100\text{ ml}$. This suggests a very high rate of exposure.

Children with pica who consume leaded house paint show a great daily variation in fecal output of lead.⁷ This probably reflects the fact that pica is episodic in a vast majority of children. It has been estimated that children with encephalopathy have a level of intake 250 times greater than normal dietary intake. Asymptomatic children with increased lead absorption may take in 10 times the normal intake. It is impossible to know at the present time whether asymptomatic increased lead absorption may have serious consequences in young

children. Efforts are underway to provide answers to some of these questions.

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Angiopathy and Cardiopathy in Wild Waterfowl from Ingestion of Lead Shot

Lars Karstad, D.V.M., Ph.D.

Introduction

Lead poisoning is believed to be the greatest natural mortality factor in wild ducks and geese in eastern and central North America. It was recognized as early as 1874, as a disease of ducks poisoned by ingestion of the spent lead shot of hunting.¹ Lead shot has been accumulating in waterfowl habitat ever since our forfathers began to use shotguns. It is accidentally ingested by ducks,

geese and swans in feeding or in obtaining grit. The adaptation of the avian digestive tract to use small stones for the grinding of food makes the gizzard an unfortunate repository for lead. Most ingested lead shot is retained in the gizzard until it is abraded by gizzard action and absorbed into the system or until the death of the bird. Five or six average sized (No. 6) lead shot is fatal dose for a mallard duck. One shotgun shell contains about 280 pellets, making up an ounce of shot. Most of the shot fired at waterfowl fall into shallow water inhabited by waterfowl. Since lead in this form is relatively inert, these shot remain in the environment indefinitely.

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* Paper presented at the symposium "Lead and Your Environment" held at Hartford, Conn., December 1, 1970.

In 1959, from his extensive field studies, Bellrose¹ estimated that about 25% of the wild mallards in North America in any year ingest lead shot and that about 4% of the continental mallard population is lost to lead poisoning. Today the estimates would be higher.

In a study of the problem in Oregon, in 1962 and 1963,² 40% of 220 mallard and pintail duck gizzards examined contained lead shot, many of them in lethal quantities. These were ducks taken by hunters and intended for human consumption. Lead shot were present in the digestive tracts of 78% of the sick or dead ducks found in the same area. It is difficult to assess the losses of waterfowl due to lead poisoning, because poisoned birds become secretive and hide in vegetation. Their carcasses are soon removed by predators such as raccoons, foxes, mink and feral cats. It seems safe to assume however, that heavy losses of waterfowl caused by lead poisoning are not without serious impact on populations of waterfowl and may, in fact, be largely responsible for the decreasing number of certain species.

Our current research interests in lead poisoning are the testing of forms of shot which may be less hazardous to waterfowl, and the pathological effects of lead, particularly the damage to blood vessels and myocardium.

It is these effects that I wish to describe here.

Materials and Methods

Heart, liver, kidney, and sometimes other tissues from naturally and experimentally lead poisoned wild waterfowl, were fixed in buffered formalin, embedded in paraffin, sectioned and stained with hematoxylin and eosin, by the allochrome method and in some cases, with phosphotungstic acid-hematoxylin (PTAH).

Lead assays on tissues were carried out by the dithizone method.³

Canada Geese and Mallards were experimentally poisoned by oral administration of commercial No. 6 lead shot in lethal doses, 6 to 8 shot for mallards and 15 to 25 shot for geese.

Observations

Gross lesions were comparable to those described by others (see Wetmore⁴ for descriptions of lead poisoned ducks; Trainer and Hunt⁵ for swans; Cook and Trainer⁶ for geese). Special attention was paid to the occurrence of infarct-like lesions in the myocardium, the smooth muscles of the gizzard, and the striated muscles of the breast, and edema of subcutaneous tissues, particularly of the head and upper neck.

Histologically the muscle lesions were confirmed as microinfarcts which were often confluent to involve large areas of muscle. These infarcts were associated with fibrinoid necrosis of the media of arterioles and small arteries (figures 1 and 2). The frequency of occurrence of myocardial infarcts in three species is given in Table 1.

TABLE 1
FREQUENCY OF MYOCARDIAL LESIONS IN NATURALLY
AND EXPERIMENTALLY LEAD-POISONED WATERFOWL

Species	Type of Poisoning	Number with Lesions/ Total Examined
Canada Goose	Natural	31/37
Canada Goose	Experimental	7/11
Whistling swan	Natural	4/ 5
Mallard duck	Experimental	8/14
		50/67 = 75%

The infarcts were usually without leukocytic infiltrates. In infarcts of varying duration, the necrotic muscle fibres were seen to lose definition and stainability and be replaced by fibrillar material staining as collagen. Histiocytes and fibroblasts were present during the stages of healing in birds which survived. The end results were scattered small scars of fibrous connective tissue throughout the myocardium. Thrombi were not usually seen in the damaged arterioles, although often the vessels lost definite form and became irregular eosinophilic masses, as shown in figure 1. Many birds which died of myocardial infarction were found to have had several earlier infarcts, which at death were in varying stages of healing. In some birds which lived longest, 3 weeks or more, myocardial changes consisted of interstitial fibrosis with fibrosis of both endocardium and epicardium (figure 3).

A second type of vascular lesion was seen in some cases. This consisted of hypertrophy and hyperplasia of capillary endothelial cells, so that capillaries between myofibers became abnormally prominent (figure 4). Similar "capillary activation" changes have been described in human lead encephalopathy.⁷

Fibrinoid necrosis of arterioles and arteries occurred also in association with infarcts in smooth muscles of the gastrointestinal tract and striated muscles of the breast. These changes will be described in a subsequent publication.

Lead content on a wet weight basis of the livers of 14 of the fatally poisoned Canada Geese ranged from 8 to 42 ppm (ave. 19 ppm). Muscle lead concentrations were not determined. Liver lead concentrations of seven experimentally poisoned Can-

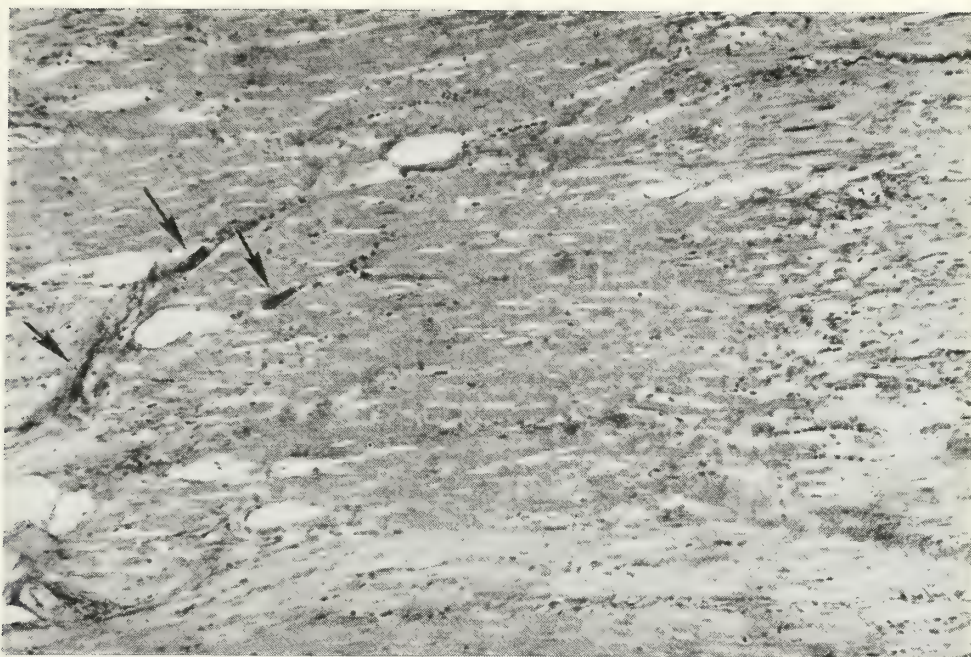


Figure 1

Area of recent infarction in the myocardium of an experimentally poisoned adult Canada Goose. Note fibrinoid masses representing damaged arterioles (arrows). Allochrome. 400 X.

ada Geese averaged 10.5 ppm, while heart tissues from the same birds had an average lead content of only 1.1 ppm. Five of these seven geese had myocardial infarcts.

Discussion

In one of the earliest descriptions of lead poisoning in waterfowl, Wetmore⁴ stated in 1919 "The heart of a bird suffering from lead poisoning is affected and the bird may die suddenly after fright or exertion". Other workers since then have described gross heart lesions in swans⁵ and geese⁶ but the nature of the lesions have never been adequately described. The 1966 paper by Cook and Trainer⁶ carries a brief description which I supplied: "Patchy myocardial necrosis was present in a goose that died on day 10. This was associated with hyaline or fibrinoid necrosis of blood vessel walls". At that time we did not realize the high prevalence of vascular and muscle lesions in lead poisoned birds. In 67 lead poisoned ducks, geese and swans (Table 1) 50, or 75% suffered myocardial infarction.

Similar lesions were found in smooth muscles of the gastrointestinal tract and the large striated muscles of the breast. Frequency of these were not determined, however, because their occurrence was not anticipated and these muscles were not routinely sampled. It was only in cases where gross

lesions were noted that sections were taken for histology.

We have referred to the vascular lesions as fibrinoid necrosis. This is purely a descriptive term, since the media of the affected vessels become an acidophilic, hyaline mass and this material stains like fibrin with PTAH and by the allochrome procedure. The pathogenesis of this fibrinoid change is not known. It may be a direct effect of lead on metabolism of smooth muscle. Although the hearts of birds with infarcts had much lower lead contents than did their livers, the lead content of the entire heart may not be representative of the artery walls, which make up only a small part of the weight of the organ. A quotation from Batsakis⁸ may be pertinent: "There is no clear cut evidence that lead produces a direct cardio-toxic effect—the changes manifested in the heart are regarded as secondary to the anemia attributed to plumbism". Certainly we have evidence that ingestion of lead shot is associated with arterial damage and myocardial infarction in waterfowl. The mechanism by which it acts is unknown.

Kline⁹ has described chronic myocarditis in five human patients with lead poisoning. The lesions consisted of interstitial fibrosis with serous exudation and relatively few inflammatory cells. He recommended routine electrocardiographic studies and close scrutiny for clinical signs of heart dam-

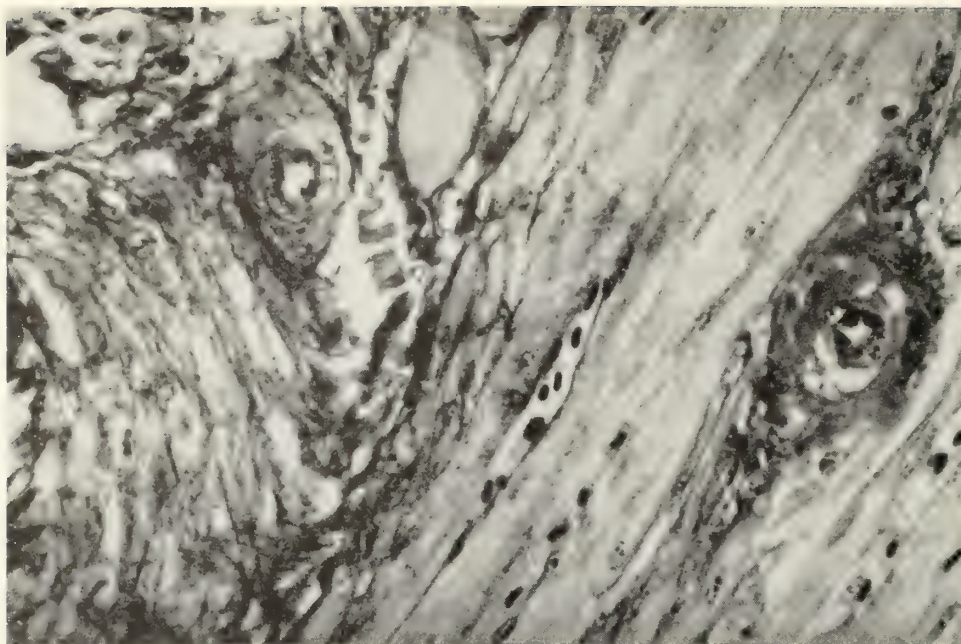


Figure 2

Same heart as Figure 1. To the left there is a normal arteriole, to the right an arteriole with fibrinoid necrosis of the media. Allochrome. 1600 X.

age in all cases of lead poisoning. He considered that the primary lesions in his cases could have been vascular, although damaged vessels were not seen terminally. Myocarditis was the terminal cause of death in two of the five patients studied and was considered a probable contributing cause of death in the others. We have noted in lead poisoned geese that lesions of relatively long standing become scattered small connective tissue scars in the myocardium and that arterioles appear to be normal. Apparently the damage to arterioles is acute and the damaged heart muscle is later replaced by fibrous connective tissue. Perhaps the myocardial damage in some of our cases of longest standing (as illustrated in figure 4) may resemble the lesions in human hearts described by Kline.

An earlier report of a human case of lead myocarditis, without confirmation by histopathology, was described by Read and Williams.¹⁰ Diagnosis was based on clinical signs, including electrocardiography. Freeman¹¹ reported a case of recovery from myocarditis in a child with chronic lead poisoning and encephalopathy. Freeman¹¹ cited the publications of Kosmider and his associates in which they reported organic electrocardiographic changes in 66% of 38 adult humans with chronic lead poisoning and the ability to induce heart lesions in rabbits by injections of lead acetate. All rabbits de-

veloped electrocardiographic abnormalities and all examined histologically had myocardial degenerative changes and focal fibrosis.

One might consider the hazard to humans eating the flesh of lead poisoned waterfowl. The levels of lead in the livers and kidneys are high while the amounts in the muscles are much lower.

Locke and Bagley¹² found only 2 ppm lead in the breast muscle of a Canada Goose that had 17 ppm lead in liver tissues. Bagley and Locke¹³ found a range of 0.3 to 0.8 ppm, with an average of 0.5 ppm, in the livers of 11 normal Canada Geese.

The concentrations of lead in the tissues of the lead poisoned birds which we have studied represent theoretical possible maximum levels of human exposure from this source, since the birds tested were fatally poisoned. Most of the waterfowl in hunters' bags would have lower levels of lead, since hunters would not ordinarily take birds in the terminal stages of lead poisoning. Another safety factor is that wild waterfowl make up no more than a very small part of the diet of most hunters, their families and friends. This differs for certain native populations. Indians around James Bay, for example, shoot large numbers of geese and ducks, the flesh of which they preserve by drying or freezing as one of their major sources of animal protein.

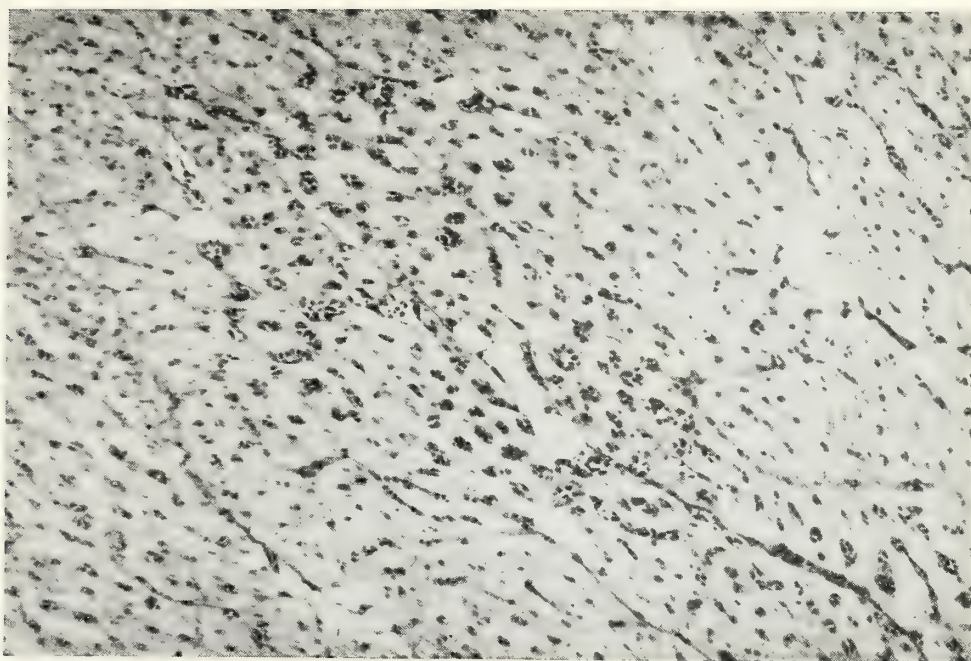


Figure 3

Swollen endothelial cells, probably also increased in number, in capillaries in the myocardium of a naturally poisoned adult female Canada Goose. Allochrome, 500 X.

Analyses on specimens taken at necropsy revealed 9 ppm lead in blood and 17 ppm in liver tissues. Twelve lead shot were in the gizzard.

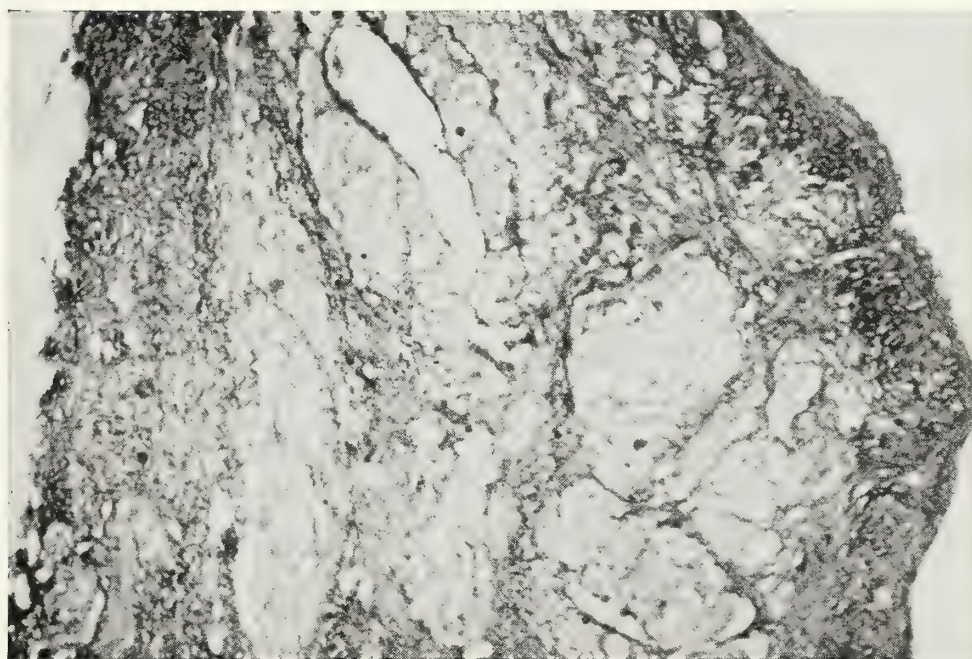


Figure 4

Section through the wall of the left ventricle of an experimentally poisoned mallard duck, showing overall thinning of the wall, endocardial fibrosis (to the right of the photograph), replacement of portions of the myocardium with fibrous connective tissue, and degeneration of remaining muscle tissue. Allochrome, 160 X. Six lead shot had been fed 27 days prior to death.

Summary

Poisoning by the accidental ingestion of the spent lead shot from hunting causes extensive losses of wild waterfowl. It was found that 75% of 67 lead poisoned ducks, geese and swans suffered myocardial infarctions and that these lesions were associated with fibrinoid necrosis of the media of arterioles and small arteries. Infarcts occurred also in striated muscles and smooth muscles of the gastrointestinal tract. The pathogenesis of the vascular lesions was not determined.

Acknowledgements

Valuable assistance in supplying specimens for study came from Dr. D. O. Trainer, University of Wisconsin, Mr. D. Dennis, Canadian Wildlife Service, and my associates at Guelph, Dr. L. Sileo and Messrs. M. Barrett, M. Hawkes, and J. Irwin. This study was supported financially by the Ontario Department of Lands and Forests, and the Ontario Department of Agriculture and Food.

Ducks and geese for experimentation were obtained from the Niska Research Center of the Ontario Waterfowl Research Foundation, Guelph, Ontario.

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Lead In The Connecticut Environment

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For many years the Connecticut State Health Department has been actively concerned with the detection and prevention of lead poisoning, whether in children or occupationally exposed workers. Health workers have long recognized the hazard to health resulting from the use of lead in industry, but only in the past two decades have we begun to realize that lead poisoning of children in our cities is a problem of great magnitude. Fatalities in Connecticut due to this cause totaled 14 in the ten year period from 1959 through 1968. Many more victims certainly were afflicted with non-fatal symptoms in-

cluding mental retardation, damage to central nervous system, convulsions and anemia.

Samples of paint from home interiors, toys and earthenware glaze have been analyzed in the department's laboratory as sources of the lead in poisoning cases. With respect to paint, it has been generally accepted that paint used on toys, playground equipment and other items and areas accessible to children such as interior walls, window sills and doors should contain less than 1% lead. Nevertheless, lead-based paint used on these items continues to be the major cause of lead poisoning among the children of Connecticut. Even toothpaste tubes have been indicted, with some tubes containing as much as 95% lead. Fortunately,

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never more than a trace has been found in the paste itself.

As result of the awareness of the critical problem of lead poisoning, a Governor's Task Force was commissioned in 1969 and has been active in reviewing all aspects of the hazards associated with lead-based paints and in developing recommendations to help formulate preventative programs.

In 1969, in conjunction with the health department of one city in Connecticut, the State Health Department conducted a survey to test the feasibility of mass screening for cases of lead poisoning as well as to determine the magnitude of the lead poisoning problem in Connecticut. In this instance, 500 children from an inner city area were tested using the urinary ALA test. Of those tested, 3.2% were confirmed as having lead poisoning. An additional 3.8% showed elevated body burdens of lead. A new method recently developed jointly by the Agricultural Experiment Station and the State Health Department for collecting mailable "dipstick-type" urine specimens to use with the ALA test promises to expedite future screening programs.¹

Lead poisoning in children will continue to be of major concern but what of the increased body burden of lead all of us are accumulating from our environment? In recent years new analytical methods have enabled us to investigate the role of lead as an environmental contaminant in air, milk, water, fish and shellfish. Since the introduction of lead into gasoline almost 50 years ago, there has been a gradual awareness of a potential health hazard to the population from this source. Each gallon of gasoline contains about 4 gm of lead. Despite some disagreement about how much lead gets exhausted into the air, most experts apparently agree that approximately 70% of the lead in gasoline is exhausted from the car's tailpipe.² A conservative estimate is that approximately half of the exhausted lead gets airborne, meaning that about 250 million pounds of lead are discharged into the air every year from automobile exhausts. Essentially all of the lead discharged by vehicles is exhausted in the form of inorganic particles, although a small percentage of the alkyl lead compounds blended in gasoline may reach the atmosphere through the escape of fuel vapors.³ Industries burning coal and discharging airborne soil particles also may contribute to the lead present in ambient air.

The absorption of lead in the respiratory tract depends on a number of factors, including the solu-

bility of the particular compound in the cells of the respiratory system and on the particle size itself.⁴ Absorption has been estimated as up to 50% of the amount inhaled.⁵ A person breathes approximately 15 cubic meters of air a day and based upon this volume a 1969 study indicates that the lead inhaled from the atmosphere in Connecticut would range from 0.001 to 0.05 milligrams per day. In this study, particulate air samples were collected at 41 stations throughout the state. On a bimonthly basis, at these stations, air was drawn through a pre-weighed glass fiber filter paper at a rate of approximately 50 cubic feet per minute for twenty-four hours. In the laboratory the exposed filter papers were again weighed and the total suspended particulate material calculated in terms of micrograms per cubic meter. The filter papers for three months' samples were composited and extracted with acid for determination of lead and other heavy metals by atomic adsorption spectrophotometry. To date, no strong correlation has been found between benzene soluble organic material and lead concentrations as had been reported by some workers.⁶ A seasonal variation for lead levels however was found in 1969 with the highest mean concentration $1.45 \mu\text{g}/\text{m}^3$ for the first quarter of the year with the lowest 0.79 for the second quarter or the spring months. Two of our least urban stations had yearly means of 0.35 and $0.40 \mu\text{g}/\text{m}^3$. When analyses are completed for 1970 it is hoped that a more complete statistical analysis of the results may be made including consideration of site location and meteorological influences. Additional work on the use of a filter media better suited to metal analyses than glass fiber is planned this year.

Several articles have been published that establish the degree of contamination of vegetation near highways from airborne lead, mainly through surface deposition.⁷ The Department of Agriculture and Natural Resources of the state has been cooperating with the laboratory in a study to determine if milk in this state has been or could be contaminated with lead via this route. Milk and feed samples from farms close to a major highway and from what might be called a remote area were examined for lead. No appreciable difference in the lead levels of the milk were found, none being over $0.01 \text{ mg Pb}/1 \text{ L milk}$. The lead values of the feeds have varied widely with the type of feed with silage containing the highest concentrations. These studies are incomplete however and will be resumed.

Another environmental media, water, is a possi-

ble source of lead. There have been a few isolated cases in Connecticut of lead poisoning which were traced to water sources. Bowers, in his work on the effect of highways on reservoirs, has presented results showing higher levels of lead in bottom sediment and in plant life of reservoirs near highways in contrast to those removed from highways.⁸ Although several reservoirs have been sampled, a complete study has yet to be done on lead levels in all Connecticut water supplies. The completion of this project is planned for this coming year. The majority of the analyses performed yielded results of less than 0.01 ppm of lead with one supply containing 0.015 ppm which is still well below the USPHS Drinking Water Standard.⁹

In addition to doing more work on establishing the present background level of lead in the public water supplies, the state also hopes to do a survey of the lead content in municipal distribution systems. It is well known that lead piping is still in use in many older homes and it has long been felt that there is a need to assay the health hazards to our population from this potential source of contamination. It would also be advisable if the resources are available to look at the distribution systems of the large number of older homes or well supplies since many of them must contain old lead pipes.

There are two other major sources of lead; foods and cigarette smoke. It has been estimated that in a heavy smoker, a few micrograms per day of lead could be added to the body burden assuming a 10% retention of the total smoke inhaled. Patterson has stated that the average smoker will absorb 10 micrograms of lead more per day than a non-smoker.¹⁰ Foods contain lead in widely varying amounts, some of it natural and some due to lead contamination from soldered joints and lead pipes used in irrigation systems or from the use of lead-containing insecticides. Federal regulations control the amount of lead that may be present in some foods but these foods make up only a very small portion of our total diet. The total lead intake of the average man from foods and beverages varies with what he eats and how the food has been handled. It has been estimated that this varies from 0.1 mg to 2.0 mg/day with a mean value of 0.3 to 0.4 mg.¹¹ One of our foods with suggested intake guidelines is shellfish.¹² The limit proposed is 0.2 mg of lead per Kg of wet tissue. This summer the State Health Department analyzed shellfish from growing areas in the state for lead and other heavy metals. It should be mentioned, however, that some

of these beds were in areas known to receive industrial waste pollution and were not representative of growing area for market shellfish. A mean level of 0.16 mg/Kg was obtained, with 10% of the samples having over .2 mg/Kg. Fish specimens of many different species collected in Connecticut waters were also analyzed; the mean value was found to be 0.08 mg Pb/Kg in edible tissue. More background data will be obtained in future surveys.

This then is a brief picture of the problem of lead in Connecticut's environment. Obviously, there are many factors contributing to the problem that can be solved only on a national level; for example, that of lead from automotive exhausts. Some can best be controlled at the local level, such as the removal of lead piping from old buildings and the elimination of lead-based paints from the interior and possibly the exterior of housing. Others, such as the elimination or reduction of airborne or water-borne lead pollution resulting from industrial discharges which pass over state boundaries may have to be handled on a regional basis. Nevertheless, the role of the laboratory will continue to be the participation in studies aimed at determining the nature and magnitude of the problems and thereby assisting in the development of programs aimed at its elimination.

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Epidemiology of Lead Poisoning in New Haven Children- Operational Factors

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Introduction

Childhood lead poisoning is caused, in New Haven as elsewhere, by lead. If lead doesn't get into the system of a child in toxic amounts, he cannot develop lead poisoning. Despite the unassailable logic of these statements, there are other etiological factors in the syndrome. Occupational health and safety experience may offer useful comparisons. Industrial managers and their health and safety advisers must design and engineer work systems to maximize the probability that all employees will work safely in spite of potentially hazardous conditions. By analogy, the raising of children is a complex task with operational components. Childhood lead poisoning may result from malfunction of the systems in which certain children live. The mothers are the major contributors to successful child rearing, therefore the operational problems of mothers should be studied systematically. Perhaps the mothers of lead poisoned children are like overloaded telephone circuits that give a busy signal. This study was designed to test the hypothesis that childhood lead poisoning was significantly more common in families with operational problems that impaired the ability of mothers to perform some of their child rearing tasks.

A Brief Review

Chisolm has described the circumstances under which lead poisoning occurs in inner city children. The key elements are a young child—a toddler with exaggerated oral tendencies; a mother with inadequate resources to cope with her multiple problems; and a housing unit with lead-containing paint or plaster within reach of the child.¹

Recurrent lead poisoning in children returned to their old environments has led to recommenda-

tions for long stays in halfway houses.^{2,3} Persistent pica is often a reason, although this symptom is uncharacteristic of other kinds of childhood poisoning.⁴ The psychological, socioeconomic and geographical associations of pica were reviewed recently.⁵ Operational problems in families where children had both pica and lead poisoning have been mentioned, for example, the tendency of families with lead poisoned children (most of whom had pica) to have more than four children in the household.^{6,7} Black children with pica have been compared with age and race matched controls. The pica families averaged 4.2 children compared to 3.3 for the controls.⁸

The disproportionate occurrence of childhood lead poisoning among black families in the United States is often accepted without further inquiry except into the housing conditions of these families although a disproportionate incidence in minority races was recorded in London also.⁹ One author noted "the larger community factors that are operating" to cause childhood lead poisoning. . . . "the. . . racism that permeates our entire society—both in attitude and, more important, in behavior toward specific groups of people who are thereby committed to closed, poisoned housing."¹⁰

The general term racism does not identify specific operational factors. Systematic analysis of recent experience in New Haven with childhood lead poisoning, which has occurred chiefly in black children, should give a valid test of the hypothesis that family operational problems can cause the condition to develop. If so, prevention might be made easier.

Materials and Methods

Paired Comparison Samples: The data for these samples were taken from the records of patients in the Yale-New Haven Hospital from 1968-1970. Patients admitted because of excessive lead absorption (Diagnostic code #961.1) were matched against

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others admitted during the same general time period with two other conditions, inguinal hernia, treated surgically (code 560.0) and pneumonia (code 493.9). Seventeen patients with lead poisoning aged between 12 and 47 months were matched by sex, and by age within 4 months, with 17 patients with inguinal hernia and 17 with pneumonia. All patients had been admitted between 4/2/68 and 2/12/70. The patients with lead poisoning were from the same 17 families for the 2 sets of comparisons, but a brother and a sister were used for a hernia and a pneumonia pair respectively.

Information was sought about the following indicators of family operational characteristics or problems; intact marriage, divorced, separated, never married; work status of father and mother;

quality of housing; private medical insurance, welfare or other public insurance; presence or absence of a formal Social Service Department report; number of siblings under age 19 in the home in addition to the patient; presence of major chronic illness in the patient; death or severe illness of near relatives; maternal deprivation of the patient; and the specific diagnoses for the particular admission. Clinical and laboratory information about lead poisoning cases was noted in detail.

Results of Matching Pair Comparisons

Table 1. lists demographic and operational characteristics of the families selected for matching. Among lead poisoned patients, the median age was about a year and a half. Slightly more than half

TABLE 1
DEMOGRAPHIC AND OPERATIONAL FACTORS IN FAMILIES OF CHILDREN SELECTED FOR MATCHING SETS,
ADMITTED FOR LEAD POISONING, INGUINAL HERNIA AND PNEUMONIA,
YALE-NEW HAVEN HOSPITAL 1968-70

		Lead poisoning #	Inguinal hernia #	Pneumonia #		
Hospitalized children selected for matching by age and sex	Age 1 2 3 Sex M F	8 (9) 7 2 (1) 9 (10) 8 (7)	8 7 2 9 8	9 7 1 10 7		
Total families		17	17	17	X ²	P
Racial-ethnic						
Spanish-speaking		2	1	1		
Black		14	4	2		
White		1	12	14	23.6	.001
Marital status						
Intact		6	12	15		
Separated		7	2	1		
Never married		4	3	1	11.4	.03
Parental employment						
Father		6	12	14	8.7	.02
Mother		4	0	0	8.7	.02
Children per family		4.65 P<.02	2.18 (P<.05)	2.88		
Supervision of index child						
Mother		11	16	17		
Older 1° rel.		4	0	0		
Sibling		1	0	0		
Sitter		1	1	0	12.5	.05
Quality of housing						
Good		0	10	10		
Average		3	4	4		
Poor		14	3	2	22.6	.001
Welfare recipient		11	5	1	13.4	.002
Family problems		14	2	0	31.3	.001
Number of diagnoses this admission		45 (46)	27	58		

Numbers in () apply to lead-pneumonia pairs

were males, more than four fifths were black. Less than half of the families had a father in the home and almost one fourth of the mothers were working. The mean number of children at home was 4.6. Six families had persons other than the mother responsible at home for the management of the lead poisoning patient. The quality of housing was poor for 14 and only average for the remaining three families with lead poisoning. If there was no specific housing quality report in the record, evaluation was based on inspection of the outside of the dwelling by one of the authors. Eleven families were receiving welfare payments and 14 had significant family operational problems in addition to trying to manage a lead poisoned child. The mean number of diagnoses per patient for this admission was a little over 2½.

The families whose children had hernia or pneumonia were predominantly white, with intact family units and fathers who were working. The mean numbers of children at home were 2.2 and 2.9 for the hernia and pneumonia families respectively. Almost all mothers were the principal supervisors of their children. More than half the housing was good and less than 1/5 was poor. Five of the hernia, and one pneumonia family received welfare payments and only two families, both in the hernia group had serious operational problems as listed in the medical or social service report. The mean number of diagnoses per patient, a crude indicator of the severity of the patient's management problems, was less than for lead poisoning in the hernia group and more in the pneumonia group.

Chi square analyses for marital status; supervision of the patient; employment of father; employment of mother; racial-ethnic; welfare recipient; family problems; and quality of housing all showed significant deviations from expected distributions. The mean number of children in families with lead poisoning was significantly greater than in the fam-

ilies whose children had either hernia or pneumonia.

These results demonstrated important operational differences between families of children with lead poisoning and other families, however the high proportion of black children with lead poisoning raised the possibility that black families in general might have operational problems like those of families with lead poisoned children and different from what would be found among white families. Accordingly, we studied a second sample.

Study of Families of Black, White and Spanish Speaking Children Hospitalized for all Causes. Charts of all patients listed as age 1, 2 and 3 in the hospital diagnostic file for the period 4/1/69-9/30/69 were examined. Charts of all 61 black (B) and 13 Spanish speaking (S.S.) children were analyzed in detail. A stratified random sample of charts of 241 white (W) children were also examined in detail. This sample included all 33 W children with 3 or more discharge diagnoses (Dx), 35 of 70 with 2Dx and 46 of 138 with 1 Dx. Three charts were unavailable and one listing was incorrect. Table 2 lists the samples by sex and racial-ethnic classifications.

Table 3 summarizes selected demographic and operational factors in the sample by racial-ethnic groups. This shows significant differences between black and white families with respect to the proportions of intact marriages, parental employment, families receiving welfare payments and patients for whom formal social service reports were made. Despite the significantly greater than expected social service workups for black children, there were proportionately fewer of them with major chronic diseases than among the white children. After adjustment of results among white children to take account of 33% and 50% samples from patients with one Dx and two Dx respectively, the trend remained but was not statistically significant. Trends among the small number of Spanish speak-

TABLE 2
NUMBERS OF PATIENTS (TOTAL AND DETAILED SAMPLES) DISCHARGED FROM YALE-NEW HAVEN HOSPITAL, APRIL 1-SEPTEMBER 30, 1969, BY SEX AND RACIAL-ETHNIC CLASSIFICATION.

Racial-Ethnic Classification	Sex					
	Male		Female		Both	
	Total Sample	Detailed Sample	Total Sample	Detailed Sample	Total Sample	Detailed Sample
Spanish-speaking	9	9	4	4	13	13
Black	33	33	28	28	61	61
White	139	68	102	46	241	114
All	181	110	134	78	315	188

ing families were somewhat similar to those among black families. Where siblings were identified as being in the hospital during the study period, their families were counted only once. The black children with lead poisoning included three sets of siblings, therefore the total black families in Table 3 is reduced to 58.

Table 3 confirms the confounding effect of racial-ethnic difference on the comparison of family operational problems in relation to lead poisoning. It establishes the baseline for the final analysis, namely the operational characteristics of black families with children hospitalized for lead poisoning compared with black families whose children were admitted for other diseases.

The characteristics of all the lead-poisoned children can be summarized as follows. There were 18 black children from 15 families, one Spanish speaking and one white child. Age range was from 13 to 40 months. Nine were males and 11 were females. Blood lead levels were determined in all

cases. The number of determinations per patient ranged from 1-18 for black children. The white child had one determination which was normal (0.015 mg Pb/100 gm blood), the Spanish speaking child had two, with a high of 0.07 mg Pb/100 gm blood (mg %), and the black children all had at least 0.04 mg% on admission, with highest values ranging from 0.04-0.185 mg%, with a median of 0.08 mg%. The sources of lead were all believed to be from paint, plaster or other materials available for the children to chew or eat. Excessive chewing or eating of foreign materials was noted in 10 patients. In several of these, older relatives had provided clay. Since many patients were under 18 months of age and some observers refuse to diagnose pica before that age, pica was not used as a factor in statistical comparisons.

In illustration of the operational problems of these families, the record of one described the separation of the parents, and the mother's disapproval of visits by her husband. She was away from

TABLE 3
DEMOGRAPHIC AND OPERATIONAL FACTORS IN ALL SPANISH-SPEAKING (S.S.) BLACK (B) AND A SAMPLE OF WHITE (W) FAMILIES WITH CHILDREN AGED 1-3 YEARS DISCHARGED FROM YALE-NEW HAVEN HOSPITAL 4/1/69-9/30/69.

		S.S. #	B. #	W. #	All #	X ²	P
Hospitalized children by sex	M	9	33	68	110		
	F	4	25	46	75		
Total families		13	58	114	185		
Operational factors							
Marital status							
# with information		13	58	107	178		
Intact		9	31	100	140		
Divorced		0	0	3	3		
Separated		3	11	3	17		
Never married		1	16	1	18	49.3	.001
Family size							
# with information		12	53	89	154		
Mean # children/family		3.58	3.21	2.77	2.99	BvsW	.05
Parental occupation							
# with information		13	58	107	178		
Father at work		10	29	100	139	41.6	.001
Mother at work or school		2	12	2	16	17.0	.001
Social Service							
# with information		13	58	114	185		
# formal reports		4	24	10	38	26.0	.001
Severity of case							
# with information		13	58	114	185		
# with major chronic disease		1	9	34 (27*)	44		
Insurance status							
# with information		13	58	106	177		
Private		5	31	93	129		
Welfare		8	27	7	42		
Both		0	0	6	6	46.0	.001

(*) Adjusted figure to correct for sampling method.

home from 9 AM to 6 PM in preparation to become self supporting and get off welfare and was under great pressures. She had had notable weight loss. She believed that eating dirt was normal for children but discouraged them from eating paint. For other families, notes on family structure and relationships indicated serious interpersonal problems between husband and wife in all cases except where the mother had never married.

Table 4 shows that families of black children with diseases other than lead poisoning were significantly less likely to have a mother separated from her husband, or at work or school, or to have had a social service report in the record, or to have had as many children in the family, or to have had poor housing. In these housing comparisons, all judgements were based on residence area and external appearance of the house, since no other information was available for non-lead poisoning cases. The children with diagnoses other than lead

poisoning were less likely to have suffered from maternal deprivation. There were non-significant trends toward more working fathers and fewer families receiving welfare payments in the non-lead poisoning group.

Discussion

These findings encourage further study of childhood lead poisoning from the occupational health viewpoint that demands objective analysis of the operational system as a prerequisite for prevention of injury and disease. Before pursuing this viewpoint, however, one should appraise the reliability of the data. Age, sex, race and insurance status of all patients were determined independently of diagnosis. Marital and occupational status of parents and family size information should not have been biased in relation to diagnosis, although sometimes incomplete for patients with minor illnesses. Housing comparisons were objective. Social service work-

TABLE 4
DEMOGRAPHIC AND OPERATIONAL FACTORS IN ALL BLACK FAMILIES WITH CHILDREN AGED 1-3 YEARS
DISCHARGED FROM YALE-NEW HAVEN HOSPITAL 4/1/69-9/30/69
"LEAD POISONING" VS "ALL OTHER DIAGNOSES."

		Children					
		Lead poisoning		All other diagnoses		Total	
		Mean age		Mean age			
		#	in mo.	#	in mo.	#	
Hospitalized children by sex and age	M	8	21.6	25	31.0	33	
	F	7	21.1	18	28.8	25	
		Families					
		Lead poisoning		All other diagnoses		Total	
		#	%	#	%	#	
Total families		15	100	43	100	58	100
Operational factors							
Marital Status							
Intact		5	33	26	60	31	53
Separated		6	40	5	12	11	19
Never married		4	27	12	28	16	28
							6.4
Parental occupation							
Father at work		6	40	23	53	29	50
Mother at work or school		7	47	5	12	12	21
Social service report		11	73	13	30	24	41
Major chronic disease in index child		2	13	7	16	9	16
Maternal deprivation in index child		12	80	6	14	18	31
Private insurance		7	47	24	56	31	53
Welfare		8	53	19	44	27	47
							n.s.
Family size							
# with information		15		38		53	
Mean # children/family		4.33		2.76		3.21	
Quality of housing							
# with information		15	100	33	100	48	100
Good		0	0	2	6	2	4
Average		0	0	10	30	10	21
Poor		15	100	21	64	36	75
							7.2
							.03

ups and estimates of maternal deprivation in the index child may have been more common in lead poisoned children than in others because of hospital staff concern. Sufficient bias to invalidate the results seems unlikely. The differences between black and white families in this small sample are similar to black-white differences noted in U.S. Census and other reports.

The view that malfunctions of family operation may be important underlying causes of childhood lead poisoning is consistent with studies on work performance by Welford¹¹ and others.¹² When subjects are given increasingly complex tasks their efficiency decreases. "Especially in cases where family or social demands are greater than the individual's ability enables him to meet, there is likely to be frustration and conflict which may lead to the disruption of efficient performance."¹¹ p.6 The black families with lead poisoned children would fit this model. They share with all black families a greater probability that the father will not be working, or if working, will be working at a lower economic level than his white fellow citizens. The lead poisoning families have added to these performance handicaps the further probability of marital problems and separation, more children to be cared for, and a mother away from home. Maternal task performance should be improved by providing these families with a range of family, job, and housing services through a coordinated team, analogous to the rehabilitation team. The combination of day care for older children, or the patient if indicated, counseling for the parents, job training for the father and housing assistance would need to be offered in ways that would continue long enough to have a reasonable chance of success.

The differences between black and white citizens in marital and family status, occupational activities and housing opportunities have practical significance for preventive medicine. An operational viewpoint would explain why a few years ago, there were only sporadic cases of lead poisoning among white children who lived in the *same houses* that are currently associated with childhood lead poisoning in black children. Furthermore white children living today in houses with lead available for them to chew have a far lower incidence of lead poisoning than black children. These white mothers have a range of operational assets not available to large numbers of black mothers. There is no evidence to suggest that they are "better" mothers in any biological sense. The limited information in the literature about family situations among white children

with lead poisoning suggests that operational problems are major determinants there also. Employment and housing opportunities must be provided for racial-ethnic minority groups with particular attention to black people, if we are to prevent the kinds of family breakdown that create the climate for childhood lead poisoning. In the meantime the health professionals must demand the specific and often costly services required to treat, rehabilitate and prevent recurrence in the families suffering from this complex disorder.

Summary

Childhood lead poisoning in New Haven was studied from the standpoint of operational characteristics of families whose children had the condition. A sample of families with lead poisoned children was matched by age and sex against families with children with two other conditions, inguinal hernia treated surgically, and pneumonia. Families with lead poisoned children were significantly more likely than the matched controls to: be black; have marital separation; have a father unemployed; have a mother employed or at school; have more children in the family; have the index child supervised by someone other than the mother; to live in poor housing; be a recipient of public assistance; have serious family problems. A second sample, drawn from all children hospitalized from April-September 1969 was studied similarly. Black families in general differed from white families with respect to the foregoing variables. Within the group of 58 black families, those with lead poisoned children differed significantly from all other black families and in the directions previously described. It is concluded that black families generally are coping with operational problems that are significantly less prevalent among white families. When the overload becomes too great childhood lead poisoning is likely if children have access to lead. Control of this syndrome will require attention to family operation as well as improvement of the physical environment.

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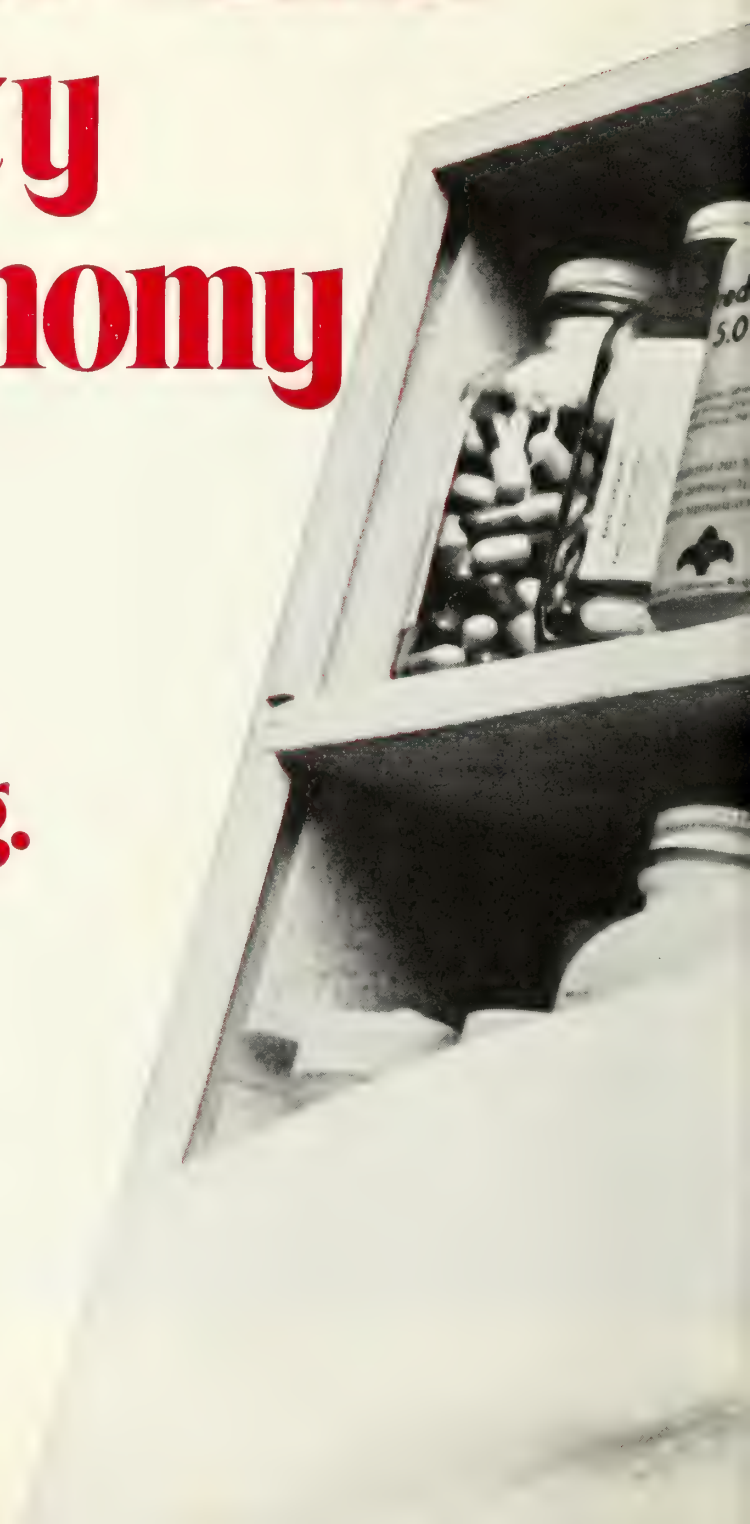
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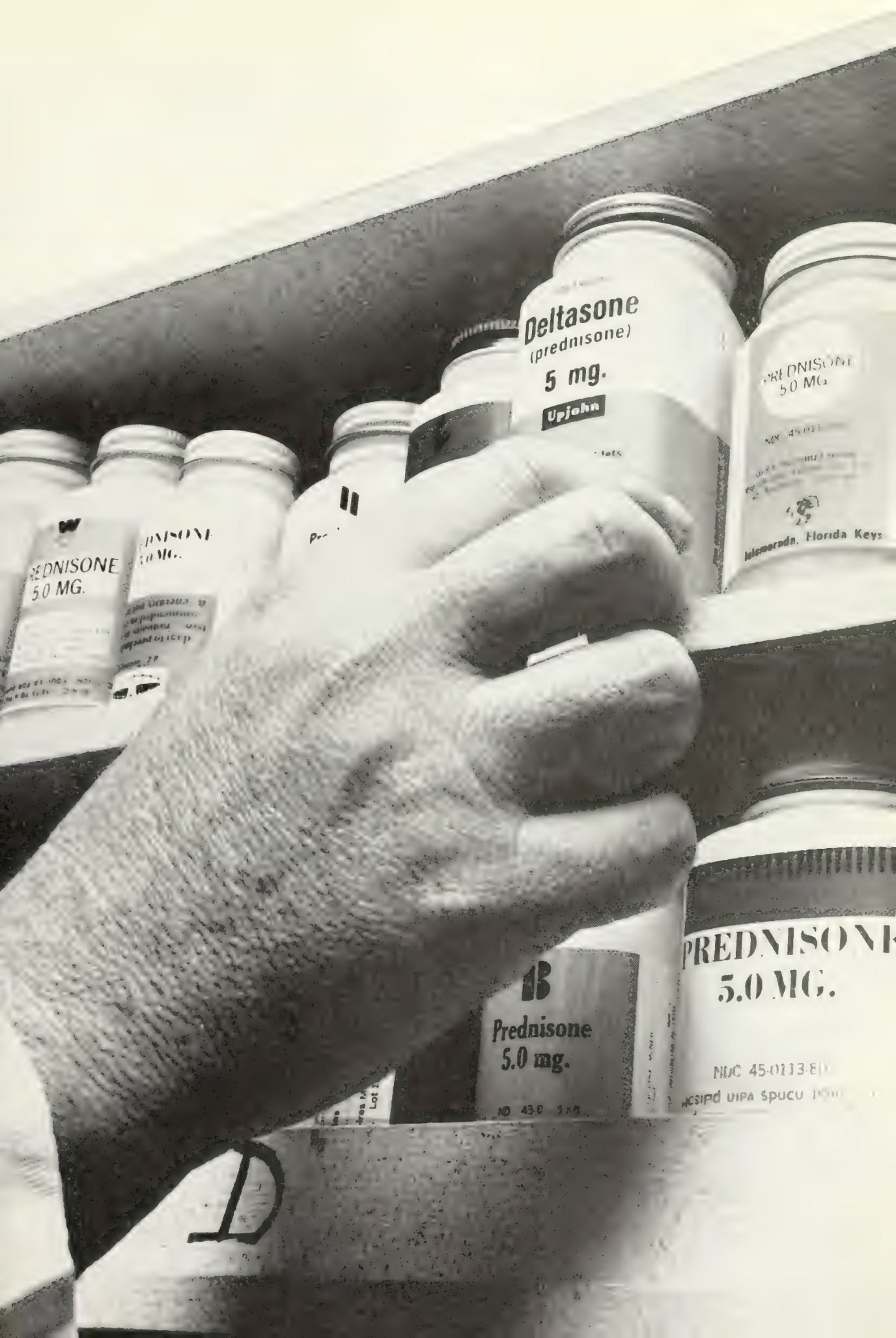
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Contraindications: As for all other corticoids. *Considered Absolute*—herpes simplex keratitis, acute psychoses and latent, healed or active tuberculosis. May be lifesaving in certain cases of pulmonary or meningeal tuberculosis, but should be used only in conjunction with adequate and effective antituberculous therapy to which causative organisms are shown to be sensitive. *Considered Relative*—active or latent peptic ulcer, Cushing's syndrome, diverticulitis, fresh intestinal anastomoses, osteoporosis, renal insufficiency, thromboembolic tendencies, psychotic tendencies, diabetes mellitus, hypertension, local or systemic infections including vaccination, varicella and other exanthematous diseases, and fungal infections, and, pregnancy particularly during the first trimester because of observation of fetal anomalies in experimental animals. If necessary to give corticosteroids during pregnancy, watch newborn infants closely for signs of hypoadrenalism and institute appropriate therapy if signs appear.

If corticoids are used in the above conditions, weigh risks against benefits.

Precautions: Deltasone should be given only with full knowledge of characteristic activity of and varied responses to corticoids. Because of inhibiting effect on fibroplasia, corticoids may mask signs of and enhance spread of infection; hence, watch patients closely, and if intercurrent infection occurs, control with appropriate antibacterial measures. If possible, avoid abrupt cessation of corticosteroid therapy because of the danger of superimposing adrenocortical insufficiency on the infectious process. Prolonged hormone therapy usually causes a reduction in the activity and size of the adrenal cortex. When discontinuing therapy, relative adrenocortical insufficiency may be avoided by gradual reduction of dose. However, a potentially critical degree of insufficiency may persist asymptotically for some time even after gradual discontinuation of adrenocortical steroids. Therefore, if a patient is subjected to significant stress, such as surgery, trauma, or severe illness while being treated, or within one year (occasionally up to two years) after treatment has been terminated, hormone therapy should be augmented or reinstituted and continued for the duration of the stress and immediately following it. Since mineralocorticoid secretion may be impaired, salt and/or desoxycorticosterone should be administered conjunctively. It is preferable to use a soluble hormone preparation in the immediate preoperative and postoperative periods.

Although unlikely with Deltasone, average and large doses of corticosteroids can cause elevation of blood pressure, salt and water retention and increased potassium and calcium excretion. Dietary salt restriction and potassium supplementation may be necessary. Glucocorticoid steroids may aggravate diabetes mellitus so that higher insulin dosage may become necessary or manifestations of latent diabetes mellitus may be precipitated. Corticosteroids may aggravate myasthenic symptoms in myasthenia gravis and should be given with proper precautions.

Muscle weakness, in some instances, attributed to hypopotassemia, has been reported following prolonged systemically administered corticoids. Excessive potassium loss, like excessive sodium retention, is not likely to be induced with effective maintenance

doses of Deltasone (prednisone), however, keep this effect in mind and perform periodic serum potassium determinations in patients on prolonged corticoid therapy. Muscle weakness occurring with normal serum potassium levels may be due to disturbance in muscle metabolism. Severe myopathy is associated with substantial doses of steroids for prolonged periods, and evidence indicates it occurs more frequently with 9- α -fluoro steroids. Replacement with non-fluorinated steroid has, in some instances, resulted in improvement.

Retardation of linear growth, roughly proportional to dose, has been noted in children on corticoids for six months or more. Following cessation of therapy, growth rate may be accelerated. Therefore, carefully observe growth of children on prolonged corticoid and if growth is retarded, reduce dose sufficiently to permit recovery before epiphyseal closure. Make every effort to avoid corticoids during pregnancy, since spontaneous remission of some diseases such as rheumatoid arthritis may occur. Long term corticoid therapy may evoke hyperacidity or peptic ulcer, therefore, as prophylaxis, an ulcer regimen and antacid are highly recommended. Take X-rays in peptic ulcer patients complaining of gastric distress, and, whether or not changes are noted, an ulcer regimen is recommended. Since prednisone causes less salt and water retention than many other glucocorticoids, patients should be observed closely for development of undesirable hormonal effects that are less obvious indications of steroid toxicity than edema and hypertension due to salt and water retention. Continued supervision of patients after cessation of therapy is essential, since there may be a sudden reappearance of severe disease manifestation.

Adverse Reactions: Adverse reactions associated with use of corticoids include: Cushing's syndrome, moon facies, supraclavicular fat pads, hirsutism, striae and acne; relative adrenocortical insufficiency particularly in time of stress due to trauma, surgery or severe illness; protein catabolism with negative nitrogen balance; electrolyte imbalance; alteration of glucose metabolism with aggravation of diabetes mellitus including hyperglycemia and glycosuria; osteoporosis reversible only with difficulty; spontaneous fractures; aseptic necrosis of the hip and humerus; activation and complication of peptic ulcer including perforation and hemorrhage; aggravation or masking of infection; increased blood pressure; convulsions; petechiae and purpura; menstrual irregularities including amenorrhea, spotting or prolonged bleeding; insomnia; psychic disturbances especially abnormal euphoria; nervousness; posterior subcapsular cataracts occasionally requiring extraction; increased intraocular tension; increased intracranial pressure with papilledema (pseudotumor cerebri); pancreatitis; necrotizing angitis; thinning of scalp hair; suppression of growth in children; thromboembolic complications; facial erythema; allergic skin reactions; ulcerative esophagitis; sweating; vertigo; weakness; myopathy; headache; exophthalmos. Adverse reactions are usually reversible and usually disappear when drug is discontinued.

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Editorials

Altruism Is Its Own Reward

Classical political philosophers such as Hobbes, Locke, Rousseau and Comte, as well as their modern descendants have found it essential to address themselves to the problems of selfishness and altruism in human nature. Ample psychological evidence is available to indicate that man is neither wholly selfish nor wholly altruistic in his behavior. Nevertheless, a large part of human behavior is altruistic. It takes its most dramatic form in emergencies, warfare, and social movements where group loyalties often take precedence over individual needs.

A wealth of recent laboratory experimentation on altruistic behavior clearly indicates that under certain circumstances people will help others who are in need, despite the absence of an externally administered reward for the altruistic person. It has not been previously demonstrated, however, that the roots of altruistic behavior are so deep that people not only help others but find the action itself the best reward. Thus we now find people will actually learn an instrumental conditioned response the sole reward for which is to delay another human being from suffering. We also find a profound similarity between the reward a person feels for an altruistic deed and conventional non-altruistic rewards. Not only

can learning be based on altruistic reward but two standard parameters of reward—delay of the reward and partial reward show the same effect with both.

Psychologists call the experimental paradigm in which a subject learns to terminate a noxious stimulus, "instrumental escape conditioning." The subject learns to make this response upon presentation of a cue which is called a conditioned stimulus as for example an electric shock and the rewarding termination of the painful stimulus is termed "negative re-inforcement. The typical noxious stimulus is an electric shock or a continuous loud noise. However, to study altruism, Weiss, et al¹ used the noxious stimulus of simulated suffering of another human being and the subject's reward was the cessation of the other persons suffering. They used a deception to mask the learning task so that the conditioning process would not be overridden by the subject's normal use of higher mental processes.

The experiment consisted of a subject and a confederate of the experimenter to evaluate the subject's performance under stress. The confederate pretended to suffer as he ostensibly received continuous painful electric shocks. The purpose of the experiment was to determine whether the cessation of the other person's suffering (altruistic reward) would have the same

THE COVER

MALLARD DUCK WITH WING DROP

Lead poisoning is the greatest natural mortality factor in wild ducks and geese in eastern and central North America. Lead shot, accumulating in shallow ponds, is accidentally ingested, digested, and absorbed into the digestive tract. Over 4% of the wild mallards are lost yearly due to lead poisoning, as heart, gastrointestinal tract, and central nervous system are affected. Poisoned birds may show "wing drop" as is demonstrated in the cover photo.

functional characteristics as the conventional rewards of escape conditioning. In order that the interpretation of the results be entirely unambiguous they proceeded to control several possibilities inherent in the behavior of human beings. This the experimenters did quite skillfully.

Having thus eliminated possible alternative explanation of their results, the appropriate conclusion was that the acquisition and partial altruistic reinforcement effects obtained are directly analogous to reinforcement effects in conditioning. In escape conditioning instrumental response speed is faster when the reward is presented immediately after the response than it is when presentation of the reward is delayed. The purpose of their experiment² was to determine whether cessation of the other person's suffering would also exhibit this fundamental property of rewards. One group was without delay and one with a 5 second delay of altruistic reinforcement. Speed was faster for immediate reinforcement than when it was delayed. In no comparison was there any trace of a main or interactive effect of sex.

Much interest has been shown on the question of how socially constructive or altruistic behavior can be learned and maintained through extrinsic rewards. However, Weiss, et al, research demonstrates behavior can be learned and maintained solely through the rewarding function of altruism. Their results also indicate that there is profound similarity between the action of altruistic and conventional and non-altruistic rewards. Not only can learning be based on altruistic reward but two standard parameters of reward, delay of the reward and partial reward show the same effects with both.

These results are compatible with several existing views regarding altruistic behavior and may be viewed as a necessary implication of some of them.

For example, if innate altruistic drives motivate people as Campell² has suggested, then drive reduction should reinforce them. If during the course of childhood socialization secondary reinforcement is conditioned to the cues of another person's relief from distress as Aronfreed³ has proposed then those cues should be reinforcing also to normal adults.

If anticipatory guilt motivates people then guilt reduction should reinforce them. If a person is motivated to adhere to the norm of social responsibility as Berkowitz⁴ has proposed then

knowledge of successful adherence should reinforce him as also should a reduction of the fear of social sanctions for transgressing the norm.

This study reveals the wide range of applications of psychological theory to improving normal human behavior as a social animal and making the best of his innate qualities in the socialization process. On the other hand, a society can discourage the expression of altruism by the ways in which it structures its values.⁵ The market place can generate moral conflict by advocating maximization and upping the organization while offering pitifully few means for the expression of concern for others. The more means a society furnishes for the expression of concern for others, the greater will altruism flourish. Even in our materialistic society a strong sense of altruism lies beneath the surface. Fellner and Schwartz⁶ indicate from a questionnaire survey that about half of a cross sectional sample of ordinary people are at least theoretically ready to donate a kidney to an unnamed stranger in need. A similar number were willing to volunteer as subjects for clinical research.—L.H.N.

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Amphetamines In Hyperkinesia: Better Learning Through Chemistry

Hyperkinesia is generally characterized by poor attention in class, disordered behavior, and intense physical overactivity. No two children have the same set of symptoms, and several additional behavioral characteristics have been associated with the disease. As with many psychic disorders there is no clear point of distinction between the hyperkinetic child and the normal child. The problems of diagnosis, combined with the fact that treatment involves commonly



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*U.S. PATENT NO. 2,895,877

abused drugs that are potentially addictive, led to widespread concern, particularly after disclosures of the number of children who might be eligible for treatment.

An article in the *Washington Post* of June 30, 1970,¹ alleged that 10 per cent of the school children in Omaha Nebraska were receiving daily doses of amphetamines. Even though Omaha officials subsequently denied such widespread usage, it was later revealed that up to 300,000 children nationally were being treated with psychoactive drugs for hyperkinesis. Furthermore, researchers in the field publicly claimed that from 3 to 10 per cent of the children in America were suffering from this disorder and might benefit from the drug treatment.

If successful administration of stimulating drugs has the paradoxical effect of calming down the hyperkinetic child, he is then better able to concentrate and classroom performance often improves. Nevertheless, some educators fear that children will be treated for hyperkinesis when they are merely the victims of poor classroom or family situations, especially since little evidence points to an organic basis for the disease, even though several different theories have been advanced. During the Congressional hearing before Representative Cornelius Gallagher's (D—N.J.) Right to Privacy Subcommittee, John Holt, author of "Why Children Fail" asked "How and why do we decide that the energy and activity that in a 3 year old is necessary and valuable, must in a 6 year old be considered a disease? . . . because it makes it less difficult to run our schools as we do, like maximum security prisons."

The Government appointed a panel of experts to look into this question. The HEW panel emphasized that "It is important to recognize the child whose inattention and restlessness may be caused by hunger, poor teaching, overcrowded classrooms or lack of understanding by teachers and parents. Moreover, it noted that adequate diagnosis may require the use not only of medical, but of special psychological, educational, and social resources. Because the problem is complicated, diagnosis is not easy and the physician might prescribe amphetamines to solve the immediate difficulty before all aspects of the problem can be brought to bear on the final diagnosis. It seems easy for principals to recognize such a child and parents to refuse his advice about taking him to a physician who might prescribe am-

phetamines and correct the hyperkinetic child's behavior.

The panel listed many of the fears commonly expressed about the use of drugs for children such as the possibilities of addiction, misuse, toxicity, and emotional handicaps. However, it concluded that no dangers exist if the treatment is properly applied. The panelists stated, however, that they were repeatedly struck by our lack of information in many crucial areas. In testimony before the Gallagher subcommittee, researchers in the area admitted that the only long term study of children treated with amphetamines involved 67 children.

Empiricism is a common tool in pharmacology and much of the use of amphetamines for hyperkinesis does not stem from controlled studies. They claim, for example, that the paradoxical effect of the drug calming down the children is a therapeutic test of the child's abnormality, for if the children were normal they would be stimulated by the drug. This problem could be answered if experiments were to be performed on normal children given amphetamines.

In one published study² amphetamines were administered to children not diagnosed as hyperkinetic, but simply reported as having learning problems. When given daily doses of the drugs, most of the children in the study showed an improvement in the academic performance when compared with double blind controls. This study raises the interesting possibility that the classroom performance of many children might be elevated by daily doses of amphetamines. The question raised is whether the public would object to better learning through chemistry for school children.

At least as far as the hyperkinetic child is concerned, the government appointed panel of experts has just declared amphetamines to be a safe and proper treatment for children suffering from the behavior disorder known as hyperkinesis.—L.H.N.

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Competent To Make A Will

From time to time we are called upon to declare whether a patient who signed a will was

at that time mentally competent to do so. The law on testamentary capacity holds that a person is mentally competent to make a will if he has an understanding of three things: the nature of the transaction, that is, he must know what he is doing; second, he must have a comprehension of the nature and extent of his estate; finally, he must have a recollection of the natural objects of his bounty, that is, he must know to whom it is that he is leaving his possessions. These requirements are not very stringent, and not intended to be. Clearly average intelligence is not required. In fact, someone with the intelligence of a moron may be capable of making a will.

Even a person having a recognized form of mental disorder is not necessarily incompetent, unless he is so mentally disordered or deficient as not to come within the three criteria set out above the law well might deprive him of his right to dispose of his property as he wishes. Wills are therefore difficult to overturn. The fact that the testator was a patient in a mental hospital at the time he signed the will does not necessarily mean that he was incompetent. Even an adjudication that a person is incompetent and the appointment of a guardian for him does not conclusively establish incompetence to make a will. Neither does suicide.

When there is reason to think that a will may be contested or when the testator is elderly, forgetful, or eccentric and especially when he disposes of his property in a way that will disappoint relatives who were expecting to inherit, it is prudent for the testator to have himself examined by a psychiatrist or for his lawyer or relatives to persuade him to do so. To be sure, he may resent the suggestion that he submit to such an examination, but if he is told that it may prevent a lawsuit, he is likely to cooperate.

Mental illnesses most often involved in will contests are the diseases of old age, and as science increasingly will be able to prolong life, these problems of wills are likely to grow more common. The aging process inevitably takes its toll of mental, as well as physical abilities. However, there is a difference between normal aging and senile psychosis. Senility is not a chronologic fact. It varies with physiologic states, personality, environmental factors, as well as superimposed emotional illness. People have reached the

age of 90 or even 100 without showing mental deterioration.

Wills made by persons of 90 or even 100 have been upheld as valid documents by the courts.—
L.H.N.

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Mutagenicity Of Chemicals and Drugs

Tremendous advances in the understanding of genetics have come through the study of sub-mammalian systems such as drosophila, bacteria, and viruses. The methods scientists used to produce mutations in the DNA and RNA synthesis were radiation and drugs. With these advances has come the realization that similar mutations may be occurring in man by way of less controlled processes such as radiation damage and alteration by chemicals and drugs. In fact many workers now believe that chemical damage is now a more important problem than radiation hazards. Man in the course of evolution has learned to detoxify foreign chemicals, but the enormous number of new chemicals that have appeared in the last 50 years that persist in the environment cause chromosome breaks. In addition there are many examples now of amplification of the mutagenic action of a drug or chemical after it has been metabolized by man.

Because of the genetic complexity of man there are immense possibilities for mutation. This is evidenced by the physical diversity of people. Individual genetic diseases occur infrequently but there are very many of them—at least 1,500 diseases are considered to be of genetic origin. Since genes control the synthesis of proteins, many of these diseases appear to be due to the absence of or abnormalities in proteins. At present, more than 70 variants of the enzyme glucose-6-phosphate dehydrogenase are known in man and 20 per cent of these are harmful. Enzymatic deficiencies are being discovered at an exponential rate, as fragments of old syndromes. This increase may, of course, not be due to a higher mutation rate but rather to the development of techniques, such as electrophoresis, that readily detect changes in protein structure.

Barton Childs reported at a conference in Washington, D.C. on November 4-6, that between 4-20 per cent of all conceptuses and 0.5 per cent of all births now have chromosome abnormalities. In addition, he reported that 20 per cent of the patients admitted to the pediatric service of the University hospital had a chronic disease in which the action of the genes is primary or very significant. It is thus obvious that mutation is becoming an increasingly important factor in human welfare. Dr. James Crow pointed out that because of the reduction in death rate due to parasitic and bacterial diseases, relatively more people suffer from genetic disease. In addition, there has been a reduction in the forces of natural selection, in the Darwinian sense, as a consequence of which we are accumulating mutations faster than they are being eliminated. Crow estimates that a mutation once introduced, will remain in the genetic material for 40 generations, "producing an increasing burden of mutational damage with each succeeding generation, since each generation adds its own new mutations to those handed down from the past." According to Carlson, the mutations "will be expressed as lowered resistance to disease, lowered life span, increased infertility, and general physiological weakness."

Of particular importance are mutations occurring in the germ cells, since these are distributed to our offspring and retained in the population. Somatic mutations which exist for only one generation are obviously of less importance unless they are carcinogenic, and many mutagens have been shown to be carcinogenic. The mechanism of carcinogenesis is unknown, many at the conference believed that alterations in the chromosomes are a part of the process. In addition, somatic mutations are very likely part of the aging process.

Geneticists have defined two major categories of chromosome alterations: gene mutations and chromosome breaks or losses. A variety of chemicals and drugs have been already identified which either cause one or both of these effects. For example, nitrous acids pair with guanine and replace thymine in DNA. Acridine dyes can cause an additional base to be incorporated into DNA during replication. Introduction of mutations by such means may have played an important role in evolutionary development and have had favorable effects. The mutation rate is abnormally increased, however, by mutagens

which alter bases or decrease the fidelity of the replication and repair system.

At the conference there were reported techniques for determining whether a drug or chemical is mutagenic and even for determining what type of mutations it produces. Although major progress in testing has occurred over the last few years, the consensus at the conference was that more research was needed and that no simple method, no matter how sophisticated is sufficient to evaluate all hazards of a chemical. Legator however expressed his view that evidence of chromosome breakage is sufficient to ban a drug without resorting to the use of sophisticated techniques to demonstrate the specific type of mutational lesion. Even though more research is needed to improve testing, more pharmaceutical firms are now looking at drugs in terms of their cytogenetic effects as well as their toxicity.

An essential part of protecting man from the harmful effects of environmental agents is the monitoring of the human population for genetic mutations. A precedent for population monitoring has been established in the mass screening of infants for phenylketonuria (PKU) which if not recognized and treated leads to mental retardation. One can also recognize by electrophoresis abnormal proteins and enzyme products of mutated genes. This type of monitoring for mutation would not reveal the cause of a change in the mutation rate, but it would serve as a public health warning system.

Epstein stated that we need a massive push toward population monitoring to put emphasis on anticipation of the problem of mutation rather than merely on detection. Detection is limited to only one generation, whereas mutations are hazards for many generations to come. What is lacking is the money to support a program to monitor the mutation rate in man.

Research effort directed toward the investigation of radiation hazards was made possible only by long range guaranteed support. The same kind of support is needed in the field of chemical mutagenesis, and hopefully industry, government, and private foundations will insure this support.—L.H.N.

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Improvement Of Patient Care Through Educational Programs

We shall have to evolve problem-solvers galore since each problem they solve creates ten problems more—P. Hein.¹

Concern about the quality of continuing medical education and its effect on the practice of physicians in this country has been widespread and deep. Program activities are extensive through the sponsorship of medical schools and their teaching hospitals, regional and national associations, medical societies and other organizations. During the past 15 years, however, the few studies of physician participation in continuing education all document the fact that traditional programs do not have a measurable effect on medical care either in the institutional setting or in the physician's office. Therefore, it would seem that the present trend to compel physicians to participate in continuing education along these lines seems to be misplaced.²

The value of extrinsic rewards such as the physicians certificate award of the AMA or of the negative motivations such as loss of society membership for failure to participate (The Oregon Medical Society, The American Academy of General Practice, the New Haven County Medical Society) is highly questionable. More plans for requiring recertification or relicensure based upon various kinds of continuing educational programs and self-assessment are gaining official support in spite of the lack of evidence that such methods are fruitful.

For the last 25 years the predominant theory in continuing medical education has been the need to keep the practicing physician abreast of advances in knowledge. This implies that the physician lacks adequate and recent information. However, whenever individual studies have been undertaken to define the problems of continuing

medical education, a lack of pertinent information is seldom found. In fact, there is too much information that the physician all too often cannot correlate appropriately with his unique needs in his practice. On the other hand, several fundamental contributions in recent years² have shown that practice deficiencies are rooted in personal habit patterns and in institutional customs of hospitals where physicians take care of their patients.

If continuing medical education is to be useful it will be necessary to identify unrecognized deficiencies in the daily behavior of the health profession and then to design programs to correct them. Methodologies for applying such principles in continuing medical education are now available. Brown³ has developed a practical and relatively inexpensive system for relating continuing education for the medical staff in a community hospital setting directly to problems in patient care management. If the program he has developed at the Chestnut Hill Hospital in Philadelphia proves to be readily reproducible in any hospital in which there is a commitment on the part of the trustees, administration and professional staff, educators will have come a long way toward achievement of the goal of improvement of patient care through educational programs.

Another promising approach is through the use of the consultation process a natural and every day occurrence in the practice of all physicians. The use of communications media and their developing technology to set up a communications network combined with a transportation system located in a strategic geographic base throughout the country could link community hospitals, physicians' offices, nursing homes, and similar health science centers and other specialty resources. In this way, consultation and education related directly to specific

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patient care problems could then become a reality for all physicians.

The more traditional concepts of having a physician return to an appropriate teaching center for a concentrated period of study can also be developed to become an effective part of continuing education. But this concept requires a modification of the present custom in which universities have simply offered programs to the physician who registers and pays the necessary fee. In the long run it would be much more effective if the teaching hospital were to develop a specific plan adequately staffed to work with community hospitals and their medical staffs to help them to identify local needs and to arrange for the training of individual physicians who would then return to the community where the knowledge and skill gained could be immediately applied to the cure of patients.

While continuing medical education is in ferment and significant developments are taking place in providing new techniques, it can be assumed that the use of books and journals will continue to have a helpful place in the daily work of the individual physician. These in combination with self-assessment examinations and participation in local, regional and national meetings, in clinical conferences, in seminars and teaching rounds, should also be encouraged. All of these educational methods can be useful and productive if they are evaluated by a continuing assessment of the quality of patient care in institutions and in individual practices, as judged by realistic criteria for improvement.

Perhaps medicine is near the solution to the vexing problem of relating continuous education to patient care. It is now possible to put into the hands of the individual physician the tool to make it possible for him to have a life-long systematic evaluation of his own practice. Weed's⁴ problem oriented record keeping system has been demonstrated and proved over a period of 12 years and is rapidly gaining acceptance in medical education and practice.

External accreditation, recertification, and relicensure are probably not the answer, and if imposed, may seriously retard the development of continuing education. It may retard also the development of correct attitudes of the physicians and other health professionals toward innovative programs such as those outlined above.—L.H.N.

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Preventing The Development Of Alcoholism

The concept of alcoholism as a disease has received social and medical acceptance only in recent times. People were moralistically oriented and tended to view alcoholism as a manifestation of character weakness and sin. However, many doctors were active in the temperance movements and as early as 1830 The Connecticut State Medical Society had established an asylum for treatment of alcoholics. However, the confusion between moral and medical concepts of alcoholism persisted until the AMA in 1935 passed a resolution that recognized the alcoholic as valid patients. This was the year that Alcoholics Anonymous was founded in Ohio. By 1950 the climate of public and medical opinion was such that alcoholism was firmly established as a disease and a wide variety of medical, psychiatric, and social programs of care were available to treat the alcoholic.¹

Awareness of alcoholism as a disease process was paralleled by increasing evidence of its public health aspects. In 1953 Lucas² demonstrated consistently raised blood alcohol levels in drivers involved in road traffic accidents and estimated that 28 per cent of persons involved in road traffic accidents were alcoholics. Sundby³ demonstrated excessive mortality ratios among alcoholics in Norway in a variety of medical conditions, including tuberculosis, syphilis, respiratory and upper alimentary tract carcinoma, hepatitis, cirrhosis, coronary artery disease, and strokes. He also demonstrated increased mortality rates in alcoholics from suicide, homicide, and all types of accidents.

Kessel⁴ showed that the suicide rate for alcoholic men was 76 times that of the general population. He also showed that 40 per cent of male patients who had made attempts at suicide were alcoholics. While drawing attention to the public health aspects of alcoholism these gross parameters of morbidity and mortality are probably

but a small indication of the extent of the problem and its impact on society. They take little account of the effects of alcohol on the family or its wider effects on industry and commerce.

This awareness of alcohol as a public health disease has focused attention on methods of prevention. Some dealt with legislation designed to limit the availability of alcohol such as the Prohibition Act. But we all know of the inability to enforce the act as well as a lack of appreciation of social realities. Medical endeavors until recently to prevent alcoholism have been concerned almost entirely with treatment of an established alcoholic. However, there is no evidence to suggest that treatment does anything towards reducing the incidence of alcoholism, desirable as it may be in reducing morbidity and mortality it is therefore necessary to examine other phases and methods of prevention.

Primary prevention is directed toward preventing the disease from getting started. Only epidemiological studies of the illness in the population can furnish knowledge of the cause or causes of the disease and the subsequent eradication. Maddox⁵ thus studied teenage and young adult drunks which indicated a correlation between high teenage alcohol consumption and later development of alcoholism. There remains the question of social perception of alcohol use. Negative perceptions seem to be transmitted from generation to generation, while romantic perceptions are transmitted via peer groups and advertising media. When the myths and contradictions about alcohol can be identified then primary prevention becomes possible, but only when the paths transmitting the myths can be interrupted.

Secondary prevention is directed towards the early recognition of the disease and the identification of individuals for whom there is increased risk in developing the disease. In the case of alcohol the prime example of individuals at risk are the children of alcoholics. About half of all alcoholics had a parent or parents who were alcoholics. The transmission of alcoholism is probably facilitated by the learning experience through which the child goes and by the fact that the child of an alcoholic grows up in an environment that is very broadly pathogenic.

In his survey of drinking among college students Maddox found an association between drinking and accidental injury. He demonstrated that those injured while drinking were excessive

drinkers, those much preoccupied with alcohol and its effects. The association between road traffic accidents and alcoholism is another means whereby the individual at risk may be identified and early treatment instituted.

In a prospective study of delinquent boys the McCords⁶ demonstrated that 11 per cent of their cohorts were found to be alcoholics 20 years later. They defined distinct personality traits in those boys who later became alcoholic, characterized by a very low overt dependent behavior and by high dependency needs. Definition and recognition of those features of personality that antedate alcoholism is yet another means whereby secondary prevention may be facilitated.

In the area of tertiary, secondary and primary prevention the role of the physician is important as a treater, researcher and educator. As a potential preventer of alcoholism, however, the physician's role as a citizen and a member of a potentially influential group of citizens is of paramount importance. Tertiary prevention does not reduce the incidence of alcoholism and the methodologies of primary and secondary prevention are still very crude. However, Wilkinson⁷ has demonstrated a sense of social measures if widely adopted would reduce many of the problems of drinking.

These include education towards the rational and nonemotional use of alcohol by the young and removal of much of the "forbidden fruit" legislations that surrounds use of alcohol by the young. He suggests that progress of education, advertising and legislation that promote the social use of alcohol in congenial and family surroundings will do much to reduce pathological drinking as it currently exists. Wilkinson's evidence to support these social and legislative proposals is based on comprehensive studies of alcohol use and abuse in a wide variety of cultures and age groups.

Physicians can do much to reduce the problem of drinking by aligning themselves with such proposals and in the long run to prevent the development of alcoholism.—L.H.N.

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Olfactory Communication: A Human Pheromone?

A pheromone is a chemical substance produced by one individual which affects the behavior or physiology of another. The food finding, trail laying and alarm responses of ants and the "assembling" of males by female moths are controlled by interpersonal chemical signals of this kind. The importance of odors as signals in mammalian mating and progeny recognition is a commonplace to bitch owners or shepherds: the realization, however, that such messages influence not only overt behavior, but also endocrine processes at a profound level dates back to the observation of Bruce and Parker¹ that the odors of a strange male causes fetal resorption in pregnant mice.

The number of similar instance of chemical communication of a hormone-like character among mammals of all kinds, especially the social forms, has grown steadily of late. It now extends to monkeys, where the sex behavior of males is pheromonically disorganized when the females are given the "pill". Apart from conscious olfacto-sexual influences, the question remains whether pheromones exist in man. Psychoanalysts concerned with olfacto-sexual influences in childhood have thought that they might, long before the biologists arrive at the scene. It has not escaped their notice that the apparently functionless scent glands and hair tufts in man are grouped in the areas of classical Freudian interest—breast, axilla, anal, and genital regions. Others have speculated that the schizophrenic, many of whose other subliminal inputs seem to reach consciousness, may be right in claiming to be able to "smell" moods such as hostility. Subliminal human pheromones producing attraction or hostility have made a target for ironical science fiction.

A recent research at Harvard by McClintock² seems to suggest that we may need to take them seriously. It is a common piece of folklore that women living together tend to menstruate synchronously. Synchronous estrus occurs in mice under conditions of close proximity. McClin-

tock's observation on women students indicates that roommates and "closest friends" do indeed show highly significant synchrony compared with random pairs. Common environmental factors such as eating at set hours in the same dormitory, a common life pattern, should have produced synchrony throughout the whole population, if these were the causes. However, randomly chosen pairs showed no such effect. Roommates tend to keep similar hours. In monkeys it appears that lunar and day length effects operate to "lock" the menstrual cycles to long light nights. However, the synchrony in human roommates was slightly, but not significantly, less than in close friends who did not share rooms.

Proximity during waking and active hours seemed to be the most important scoring factor in bringing synchrony about. Direct "sympathy" would have required knowledge of each others menstrual status, and this was rarely present, at least explicitly. The "choice" after McClintock's careful analysis of possible synchronizing signals seems to lie between a pheromonal effect and some other subliminal "message". In view of the primate evidence it seems that a pheromonal effect is at least a reasonable possibility.

It, of course, will take a good deal of experiment complicated in humans by the number and suggestibility of human modes of signalling to find out if a pheromone is involved or not. If it is, the consequences could be practically significant and not a little exciting. In our age we need badly to control reproductivity by minimal signals. Groddeck believes that human olfactory discrimination is as sharp as in the dog, but repressed for infantile psychosocial reasons. This aside, we could well agree that the response to steroid hormones, their products, or large ring cycloketones which resemble them sterically, might be several orders of magnitude greater and more economical via the olfactory system than by injection, and possibly quite different also.

The trigger amounts of pheromones acting via the nervous system are pharmacologically minute and of the order of a few molecules. A police dog can smell progesterone on an object briefly held by a pregnant woman.³ Most functional mammalian pheromones are in fact derived from sex hormones or sterically similar to them in outline, a few are long chain lactones or possibly phenols.⁴

As to cyclic variations in sensitivity from the receiving side it has long been known that the ability to smell exallolide, a synthetic substance similar to the mammalian signal odor—avetone is estrogen dependant. It can be smelled by women only in the estrogen phase and by men after estrogen injections.⁵ This kind of phylogenetic fossil is in itself significant. There are remarkably few mechanisms that are functionless.

It is dangerous to arrive at a conclusion by processes of exclusion. It may prove that menstrual synchrony is behaviorally or socially mediated through some other mechanism. If it is not, however, we may have a key to an unsuspected and far-reaching branch of human biology which re-emphasizes both our mammalian and our social patterning.

It could also have practical implications. In insects synthetic pheromone have been developed which far outperforms the natural substances. Hippocrates attributed abortifacient powers to the sense of smell. In mice this appears to be the case. An olfactory contraceptive would be no mean achievement.—L.H.N.

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Herpes Zoster: Endogenous Re-Infection From Vaccinia-Zoster (V.Z. Virus)

Over 60 years ago Von Bokay drew attention to the fact that children in contact with a person with Zoster may contract varicella. This observation was confirmed when Zoster vesicle fluid was shown to produce a varicella-like illness when inoculated into children who had not had varicella but it was harmless if they had. Finally, there was demonstrated the ability of convalescent Zoster serums even after storage to protect susceptible contacts during a varicella epidemic. The virus is now grown in tissue culture and the virus obtained from varicella and Zoster are indistinguishable. The organism was named varicella Zoster (V-Z) virus and is classified among the herpes viruses.



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Here then are 2 different diseases caused by the same parasite; varicella represents the reflection in the human host of its transmission from person to person. Zoster is less easily understood. It is believed now that after an attack of varicella a remnant of the virus remains in a latent state in the sensory ganglia for the remainder of the life of the host. When the host defenses are depressed reactivation is postulated to cause zoster. The study by Miller and Brunell of 108 zoster sufferers showed only 4 had a possible recent exposure to varicella or zoster thus supporting the idea of reactivation of a latent virus rather than spread from one sufferer to another.

Reactivation may occur after certain exciting factors such as local pressures on the ganglions or defects in cellular or humoral immunity, but in many cases no exciting cause can be found. After reactivation the virus spreads most often peripherally from the dorsal root ganglion along the sensory nerve. It may, however, very occasionally spread centrally and produce meningitis, less frequently, posterior and anterior poliomyelitis, less frequently still, ascending myelitis and very rarely encephalitis. Hematogenous dissemination is the rule in primary infections (chickenpox) but only occasionally in reinfections. In the latter, there is neurotransmission of the virus with much pain. There are very rare cases of second attacks in zoster in about 2 per cent. As many as 4 attacks of zoster in one individual have been reported, each attack having involved a different part of the body. When varicella virus was experimentally injected into the skin, chickenpox developed in some subjects and zoster-like lesions in others. Presumably, the susceptible individual contract chickenpox. Whereas in immune persons localized vesicles simulating zoster develop.

The frequency of reinfection and its consequences are important aspects of the natural history of virus diseases in man. This problem is coming to the fore and studies of rubella have created a great deal of interest in re-infection. This is obviously associated with incompleteness of resistance generated by primary infection possibly because of an incomplete immune response at the time of the primary infection or because immunity wanes with the passage of time. In either case, a "booster" effect occurs with reinfection and immunity is strengthened. Most systemal viral diseases result in lifelong immunity. It is not surprising when one examines

the situation more carefully to find out that the "life-long" immunity is actually maintained by repeated attacks of clinically inapparent reinfections.

The recognition of viral reinfection, however, is different, and escapes notice. In the first place most reinfections are asymptomatic as they may be mild and localized at the portals of entry whether conjunctivitis, the upper respiratory tract, or the gastro intestinal tract. Hence, the clinical picture of the primary disease which may be characteristic as to allow specific clinical diagnosis are often absent in reinfection. Then there may be present neutralizing antibody which tends to decrease both the quantity of viral excretion and the magnitude of antibody response so that attempts to make definitive virologic or serologic diagnosis are difficult and there are other factors in growing viruses in the presence of high levels of immunity in the host.

In any event, reinfection occurs in persons with partial immunity acquired from previous experience with the same virus. It can be endogenous or exogenous. The endogenous form, like reactivation tuberculosis represents a reactivation form of viral infection. After recovery from the primary or initial infection the virus goes into a state of latency. Reinfection takes place by reactivation of the latent virus. The outstanding examples of such endogenous infections are in the herpes virus group including herpes simplex, herpes zoster, and cytomegalic virus. Subacute sclerosing panencephalitis associated with the measles group also belongs in this group.

The exogenous group of reinfection includes a large selection of human viral diseases. The presence of circulating antibodies does not necessarily protect a person from subsequent attack by the same virus. For instance, second attacks of influenza and other viral illnesses are not rare and a second attack of systemic viral disease though clinically uncommon are not at all unusual in subclinical or inapparent form. These include measles, rubella, smallpox, serum hepatitis, mumps and cytomegalic inclusion disease.—L.H.N.

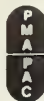
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Science Tools: The Bifocal Demand Pacemaker

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The original external stimulation was uncomfortable but life saving. A more acceptable operative thoracotomy followed for permanent electrode and power unit placement. Thoracotomy in turn was followed by the truly simple transvenous technique under local anesthesia, making it possible to work on the acutely ill and very debilitated. The simplicity of the surgical technique has broadened pacing indications so that now if one is not sure he can do it with relative safety.

Until now, we have thought only of ventricular pacing although as we think of it atrial systole is an important element of cardiac reserve being estimated to be as much as 25 per cent.¹ If one could force both atrial and ventricles in a normal sinus-ventricle sequence one could add a significant element to ventricular efficiency. Observations have been made that in some hearts suffering with congestive failure and atrial fibrillation the failure would disappear when normal sinus rhythm was restored.

Bercovitz has now given us an opportunity to use a pacemaker that offers patients with sinus bradycardia or block some of the advantages of normal sinus rhythm. As might be expected if the cardiac output is normal before installation of the bifocal (atrial and ventricular pacemakers) the cardiac output rises initially and then in time returns to normal. At first this suggests that the advantages of the "atrial kick" or improved ventricular filling by atrial contraction has been lost. But this is not so. Sharing, et al have reported² at the 43rd session of the American Heart Association that a heart with ven-

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tricular pacing uses up more oxygen than one with both atrial and ventricular pacing in correct sequence. So that even at normal cardiac output there is impressive theoretical advantage in the bifocal demand pacing when the atrial and ventricular sequence is properly timed. There is lower oxygen cost in myocardial work. Certain patients with acute myocardial infarction and low output or patients with chronically low cardiac output will be benefitted by temporary or permanent bifocal pacing.

At the same heart meeting Ramo and co-workers reported that the present studies suggest that a properly timed atrial systole plays an important role in determining stroke volume which is most apparent in clinically ill patients. This response indicates that despite the presence of heart failure the heart was not on the flat portion of the Starling curve. Again it would appear that when a patient needs a greater cardiac output bifocal atrio-ventricular demand pacing may serve as a mechanism by which he can achieve it.

The development of the bifocal demand pacemaker double circuitry in a power pack size comparable to existing pacemakers makes their appropriate use possible. The development of J shaped atrial electrodes to supplement the conventional bipolar right ventricular electrode renders insertion by the simple transvenous route feasible. Substantial experience such as that reported by Castillo³ offers considerable clinical and physiologic understanding of this new addition to the treatment armamentarium of cardiac pacing. The equipment should be available commercially in the near future.

The clinical studies on bifocal demand pacing and particularly the engineering achievement of Bercovitz is a contribution of incalculable value to lives saved and health gained. However, we must not forget it rests on the shoulders of physiologists who have clarified the role of the atrium in ventricular efficiency. It rests also upon the shoulders of all those physiologists and cardiologists who have been involved in the field of pacemakers.—L.H.N.

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Society and Medicine I: The Vietnam War

The most outstanding disease of society is war. There are numerous other diseases of society that place an enormous burden on us all and the medical profession in a special way, for the consequences of societal illness are malnutrition, poverty, under education, crowding, pollution, alcoholism, venereal disease, accidents on the road, mental disorders and much more, which place an especial burden on the medical profession. If we can get a clear glimpse of the consequences of one of society's disease, war, on the population and the enormous burden it places on physicians, we might be able to take a better look at other evils in our society that increase illness and place a heavy load on our profession in peace time.

The traditional and time honored role of the physician is to heal and comfort the injured, to treat the sick, to prevent the occurrence and spread of disease and to rehabilitate the victims without regard to political allegiances or military v.s. civilian status. In the turmoil that was Vietnam and now is much of southeast Asia, the medical profession has found it difficult to fulfill this role. Society has put too great a burden upon our profession. Aside from deaths in combat which involve over 55 thousand Americans and hundreds of thousands of wounded, there are over a million Vietnam military casualties.

The civilian populations of Vietnam and now Laos and Cambodia are also paying an appalling price in deaths and wounded from military bombing and in the malnutrition and infectious disease that inevitably stem from the creation of large numbers of refugees, and from the severe disruption of the social fabric. It is this tragic consequence of the war that Vastyan deals with in a recent issue of *Annals Of Internal Medicine*.¹ He presents an analysis of the magnitude, the nature and the evolution of public knowledge of the desperate medical needs of the Vietnam civilian population.

Reliable statistics are not easy to obtain on the number of civilian refugees. The general outlines have, however, emerged. There are 400 Vietnamese physicians to care for a population of 17 million. Programs of public health, preventive medicine, and hospital and medical personnel, always inadequate, have become overwhelmed by the rapidly swelling load of sick and wounded civilians. Glimpses of this appalling medical situation are to be found in various pub-

lished reports of American physicians who volunteered for personal service in Vietnam and by several books.² Another source of information concerning civilian casualties in South Vietnam is the Subcommittee (of the U.S. Senate Committee on the Judiciary) to investigate problems connected with refugees and escapees.⁵

This Subcommittee has brought to light the enormous needs of civilian medical care as well as the achievements and deficiencies of the official U.S. and South Vietnam programs designed to meet them. The report of September 28, 1970⁵ estimated that out of a population of approximately 17 million, more than 1 million have become casualties since 1965, and about 6 million have become refugees. With the spread of the war, a similar situation was rapidly developing in Laos and Cambodia. Despite the pacification and Vietnamization program, the need for medical services there is enormous and growing rapidly in Cambodia and Laos. In 1970 there were estimated to be 79,000 paraplegics and amputees in that country. These are cold statistics, but each one represents a suffering human being, a man or a woman, a boy or a girl.

At the end of Vastyan's article are some very penetrating questions. Why has professional and public attention been so little relative to the enormity of the war engendered medical disaster in South Vietnam? Why the relatively high degree of official American and South Vietnam indifference to attempting to relieve the disaster effectively? Can it be that what should be altruistic medical aid is directed to a political goal rather than to suffering or need? Answers to these questions are not easy but they are imperative and to obtain them the tangle of medicine with politics will have to be unravelled.

In the fascinating account of his trip to South Vietnam in 1967 with the AMA appraisal team Dr. J. Knowles repeatedly wrestled with the intertwining of medicine and politics. At the conclusion he comments "one wonders how to relate the cost to long term effectiveness in the present struggle. Do our ends really justify the means and the cost involved in terms of human misery and billions of dollars diverted away from

more pressing needs"? These questions are as relevant in 1971 as they were in 1967 and the political answers are almost as controversial now as they were then.

What can we physicians do? We can try to keep ourselves better informed about the situation. We can support medical relief programs already in action in the area. We can urge official support for better programs. We can continue to help improve medical education in South Vietnam. Also important is to ask ourselves whether the best treatment for the medical needs in Indochina is not preventive treatment, that of a political settlement that would stop the fighting of both Americans and Asians.

There is, however, one major deduction we must make from this war. If society produces medical problems of such magnitude as to overwhelm the physicians, are there any societal ills other than war which makes undue demands upon physicians thereby rendering them in short supply. We are being told we need an additional 50,000 physicians. Would we need them if society looked to itself for causing this great need by failure to respond to the preventable aspects of human ills. May not our politicians by their inaction be the chief cause of too much sickness or too little physicians to deal with them.—L.H.N.

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Lifton, R. J.: *History and Human Survival*. New York Random House, 1970.

FROM THE EXECUTIVE DIRECTOR'S OFFICE

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Scientific Activities

SUMMARY OF ACTIONS COUNCIL MEETING

Wednesday, April 7, 1971

I. Attendance

Present in addition to the Chairman, Dr. S. J. Martin, and the Vice-Chairman, Dr. K. F. Brandon, were: Drs. Granoff, Weber, Grendon, Burnham, Edson, Abbot, Dean, Gardner, Fabro, Rem, Cramer, Ragland, Roch, VanSyckle, Friedberg, Johnson, Harkins, LaBella, Freedman, Root, Klare and Bradley.

Also present were: Mrs. Lindquist, Mr. Olson (FCMA), Mr. Sullivan, Mr. Tomat and Dr. Richards.

Absent were Drs. Harwood, Pelz, Wilson, Palomba, Nemoitin, vonGlahn, Purnell and Hess.

II. Routine Business

Approval of Minutes

As printed and distributed, it was VOTED to approve the minutes of the meeting of March 26, 1971.

Date of Next Meeting

In accordance with the Bylaws, the organizational meeting of the new Council will be called by the President "as soon as possible after the Annual Meeting of the House of Delegates." Thursday, May 13, 1971, has been mentioned as a tentative date.

III. Old, New and Special Business

Change in Nominations

Committee on Hospitals: Having been apprised that Arnold H. Janzen, Hartford, will be unable to serve as chairman of this Committee for 1971-72, it was VOTED to nominate Christie E. McLeod, Middletown, for this post and to transmit this nomination to the House of Delegates on April 27, 1971. Dr. Janzen will remain on the Committee as a member.

Request for Endorsement—CHREF

The Council received a request from the Connecticut Hospital Association that endorsement be given to a proposal of the CHA's Research and Education Foundation which is being submitted for funding (in the amount of \$150,000) to the W. K. Kellogg Foundation, Battle Creek, Michigan. Having considered the outline of the proposal furnished (1 copy) by CHREF, the Council concluded that it did not have sufficient information available on which to make an informed judgment. It was VOTED, therefore, to refer the proposal to the Ad Hoc Committee on Statewide Medical Planning for study and report to the Council, such study to be undertaken as soon as practical and to include, if possible, joint conference with representatives of CHREF.

Recommendations—Committee on Public Relations

It was VOTED to resubmit to the Committee, for further study of attendant costs, etc., recommendations of the Committee that the Journal and other CSMS publications be sent gratis to non-member, licensed physicians and the chief residents on all services in all Connecticut hospitals.

Reports—67th Annual Congress on Medical Education, Chicago, 2/11-15/71

- (a) It was VOTED to accept with commendation a subject report submitted by Charles B. Cheney, New Haven, and to distribute copies of same as information to: The members of the Committee on Medical Education and Licensure (Connecticut Medical Examining Board), the members of the Committee on Postgraduate Education, and the Directors (or Committee chairmen) of Medical Education in all Connecticut hospitals.
- (b) It was VOTED to accept with thanks a subject report submitted by Harold D. vonGlahn, Old Lyme, dealing primarily with the Federation of State Boards portion of the Congress, and to distribute copies of same as information

to: The members of the Committee on Medical Education and Licensure (CMEB) and the members of the Committee on Postgraduate Education.

**Report—AMA-ABA Medicolegal Symposium,
N.Y.C. 3/17-18/71**

It was VOTED to accept with thanks a report on the proceedings of this Symposium submitted by Harry P. Engel, Bridgeport, and to distribute copies of same as information to: The members of the CSMS-CBA Conference Committee, of the Judicial Committee, of the Committee on Professional Liability and of the Ad Hoc Committee on Peer Review Planning.

**HEW Communication re Grants for
Peer Review Organization Planning**

The Council received a letter from the Department of HEW, advising that a program of grants to medical societies for research and development in the field of peer review organizations is in the process of being set up by an agency within HEW and inviting medical societies having an interest in PRO development to advise the agency of such interest and of wishing to be considered for the awarding of grant funds.

It was VOTED to direct the staff to respond to HEW by letter, indicating the Society's interest in PRO development and of its desire to be considered for the awarding of grant funds. April 16, 1971, is given as the deadline for filing such letters of interest with the HEW agency.

**Assignments to Ad Hoc Committee on Administrative
Organization and Planning**

- (a) *Hartford Branch Office During Sessions of General Assembly:* It was VOTED to direct the Ad Hoc Committee to study and report to the Council on the feasibility of maintaining and manning a Hartford office facility during sessions of the General Assembly, with a view toward expediting and making more effective the Society's legislative program.
- (b) *Staff Personnel and Assignments:* It was VOTED to direct the Ad Hoc Committee to maintain a continuing study of the needs of the Society with respect to staff personnel and assignments.

State Legislation

LCMA Communication: It was VOTED to receive as information a resolution adopted by the LCMA Executive Committee, at a recent meeting, which recommended that the Society take "neces-

sary action to improve the representation of the Society at hearings of the General Assembly". Members of the Council are urged to cooperate with the Committee on State Legislation in an effort to keep members at the local level as fully informed about legislative matters as possible and to encourage their participation by volunteering to appear at hearings and to contact their local legislators. The staff stands ready to assist in all such efforts.

Resolution—The Chairman of the Council

By acclamation, accompanied by a standing ovation, a resolution was adopted in recognition of the services rendered by Stevens J. Martin, Hartford, during eight consecutive terms as Chairman of the Council. The resolution follows:

BE IT RESOLVED: That the members of the Council of the Connecticut State Medical Society extend greetings to a valued friend of long standing, Stevens J. Martin, Hartford, as he completes his eighth consecutive term as their Chairman, and convey to him sincere thanks and appreciation for the excellence of his performance in that office and for his unfailing dedication to the work of the Council and of the Society; and be it further

RESOLVED: That this action be reported to the House of Delegates on April 27, 1971 and be publicized to the members of the Society.

N.B.: *The foregoing is a summary of the proceedings and action of the Council on April 7, 1971. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by an interested member of the Society.*

Placement Wanted

Anesthesia—Chest Diseases—35 years of age, Certified, wishes solo type practice in a large or medium size community in Connecticut. Interested in running an Inhalation Therapy Department and Intensive Care Unit and have an office in the hospital. Part salaried or other arrangement. Connecticut license. Contact: Rahim Aghai, M.D., 1527 Cambridge Street, Cambridge, Massachusetts 02139.

Anesthesiology—34 years of age, Certified, wishes solo, group or institutional type practice in a large or medium size community in Connecticut. Interested in intensive care and teaching. Presently in practice.

Family Practice—44 years of age, Eligible, wishes solo type practice in a small community in Connecticut. Presently in

practice. Part-time position industrial medicine or school. Reasonable proximity to New Haven-Cheshire-Waterbury area. Available immediately. Connecticut license.

General Practice—Emergency Room—29 years of age, wishes associate, institutional or industrial type practice in Connecticut. Desire Locum Tenens for the months of July and August and part-time for remainder of year (evenings and weekends). Military obligation completed. Connecticut license.

General Practitioner—33 years of age, American Board Eligible with National Boards wishes solo type practice in a medium size community in Connecticut. Military obligation completed. Contact: Joseph L. Hokik, M.D., 383 Rochester Street, Fall River, Mass. 02720.

Internal Medicine—Nephrology—30 years of age, American Board Eligible wishes group, associate or institutional type practice in a large or medium size community in Connecticut. Contact: Maher A. A. Azer, M.D., Holiday Garden Apts., Iowa City, Iowa 52240.

Internal Medicine—Cardiology—32 years of age, National Boards, wishes group, associate or institutional type practice in a large or medium size community in Connecticut. Contact: Paul J. Block, M.D., 10 Hewitt Road, Rockville, Centre, New York 11570.

Internal Medicine—30 years of age, Eligible with National Boards, wishes group or associate type practice in a large community in Connecticut. Military obligation completed. Connecticut license.

Internal Medicine—Pulmonary—32 years of age, National Boards, wishes group or institutional type practice in a large or medium size community in Connecticut. Presently in practice. Contact: Stephen R. Fish, M.D., 19 Rockaway Lane, Arlington, Massachusetts 02174.

Internal Medicine—32 years of age, Certified with National Boards wishes group or associate type practice in Connecticut. Interested in group practice and possibly teaching on house staff level. Military obligation will be completed in July. Contact: Sanders T. Frank, M.D., 48 TAC Hospital, APO New York 09179.

Internal Medicine—33 years of age, Eligible with National Boards, wishes associate type practice in a large or medium size community in Connecticut. Military obligation completed. Connecticut license. Available immediately.

Internal Medicine—Gastroenterology—31 years of age, American Board Eligible with National Boards wishes solo, group, associate, institutional or industrial type practice in a large or medium size community in Connecticut. Connecticut license. Military obligation completed. Contact: Arnold L. Klipstein, M.D., 113 Florence Road, Branford, Connecticut 06405.

Internal Medicine—33 years of age, Certified with National Boards wishes solo, group or associate type practice in a large community in Connecticut. Prefer to be with hospital with full house staff. Military obligation completed. Contact: William E. Miller, M.D., 115 Niuiki Cr., Honolulu, Hawaii 96821.

Internal Medicine—Nephrology—32 years of age, Eligible, wishes Army type practice in Connecticut. Available immediately.

Obstetrics & Gynecology—31 years of age, Eligible with National Boards, wishes group or associate type practice in a large or medium size community in Connecticut. Contact:

Marvin Bloshinsky, M.D., 2230 Danbury Drive, Columbus, Georgia 31907.

Obstetrics & Gynecology—46 years of age, wishes solo or associate type practice in a medium size community in southern Connecticut. Military obligation completed. Connecticut license.

Obstetrics & Gynecology—32 years of age, Eligible with National Boards, wishes group type practice in a large or medium size community in Connecticut. Presently in practice. Military obligation completed. Connecticut license. Contact: Charles E. Winkelstein, M.D., 1934-B Williford Street, Ft. Eustis, Virginia 23604.

Ophthalmology—39 years of age, Eligible with National Boards, wishes solo, group or associate type practice in a large or medium size community in Connecticut. Military obligation completed. Available immediately.

Ophthalmology—33 years of age, Eligible with National Boards, wishes solo type practice in a medium size community in Connecticut. Connecticut license. Military obligation completed. Available immediately.

Otolaryngology—29 years of age, Eligible, wishes solo or associate type practice in a large or medium size community in Connecticut. Connecticut license.

Pathology—39 years of age, Eligible, wishes group, associate or institutional type practice in Connecticut. Available immediately.

Pediatrician—32 years of age, with National Boards, wishes group or institutional type practice in Connecticut. Military obligation completed. Contact: Richard M. Goldstein, M.D., 2509 Pine Street, Philadelphia, Pa. 19103.

Physician—young, Connecticut licensed physician, Eligible wishes emergency room work on a part-time basis.

General Surgery—32 years of age, Certified, wishes solo, group, associate or institutional type practice in Connecticut. Presently in practice. Contact: Candido E. DeBorja, Jr., M.D., 280 River Road, Apt. 4-B, Piscataway, New Jersey 08854.

General Surgery—Thoracic—31 years of age, Certified, wishes group or institutional type practice in a medium size community in Connecticut. Contact: Antonio T. Donato, M.D., 79 Southbourne Road, Jamaica Plain, Mass. 02130.

Surgery—36 years of age, Eligible with National Boards, wishes group type practice in a large or medium size community in Connecticut. Interested in a practice of general surgery at a hospital with a teaching program, also, would like to join a group of doctors who have an interest in overseas medical work. Available immediately. Contact: David W. Fricke, M.D., 8340 Church Lane, Apt. 1, Baltimore, Maryland 21207.

Surgery—31 years of age, Eligible, wishes group or associate type practice in Connecticut. Contact Loretto A. Gunther, M.D., 7373 Ridge Avenue, Apt. 434, Philadelphia, Pa. 19128.

Surgery—Thoracic—34 years of age, (surgery) Certified; (thoracic surgery) Eligible with National Boards, wishes solo, group or associate type practice in a large or medium size community in Connecticut. Military obligation completed. Connecticut license. Contact: Daniel W. van Heeckeren, M.D. Thorax Kliniken, Karolinska Sjkhs, 10401 Stockholm, Sweden.

Urology—37 years of age, Eligible, wishes group or associate type practice in a medium size community in Connecticut. Available immediately. Contact: Prasant K. Mitra, M.D., 2829 Sedgwich Avenue, Bronx, New York 10468.

Placement Opportunities

Anesthesiologist—Board certified or eligible. Excellent opportunity in expanding Hospital; Allied with Medical School; Progressive multispecialty medical staff; Financial arrangements negotiable; Contact Administrator, Rockville General Hospital, Rockville, Connecticut 06066. Tel. 203-872-0501.

Director of Clinical Laboratories needed immediately in 1400 bed State-owned institution for mentally ill. Duties include clinical and anatomical pathology with some teaching and research activities, if desired. Modern facilities, excellent fringe benefits, competitive salary. Write Superintendent, Norwich Hospital, Norwich, Connecticut 06360.

General Practitioner or Internist for incorporated medical group in Meriden, Connecticut. Population of 55,000. Guaranteed salary plus bonuses based on performance. Early partnership with fringe benefits, including pension plan. Write or call the Colony Medical Group, Inc., 377 Broad Street, Meriden, Connecticut. Phone (203) 237-7411.

Pediatrician—Two Pediatricians in Stamford, Connecticut desire a third partner for active practice. Excellent salary leading to partnership. Contact: Ralph Tella, M.D., or Michael Suchenski, M.D., 107 Glenbrook Road, Stamford, Connecticut. Phone. (203) 324-3440.

Physicians—General Practitioner or Internist to join well established physician nearing retirement. Connecticut shoreline community served by Yale-New Haven Hospital.

Physicians—Established general practice available with medical directorship of a nursing home and cardiovascular diagnostic work if interested. Fully equipped office in a new medical building close to the hospital. Contact: Karl C. Suerig, M.D., Dearfield Medical Building, Dearfield Drive, Greenwich, Connecticut 06830. (203) 661-5664.

Psychiatrist—Board certified or eligible, to direct Mental Health Clinic in general hospital, half time, \$15,000 to \$25,000 depending on qualifications, opportunity for private practice, prefer with clinic experience and interest in development of comprehensive community services; attractive living in semirural community with University, near urban centers; send curriculum vitae with inquiry to Richard B. Ogren, Administrator, Windham Community Memorial Hospital, Willimantic, Connecticut.

Psychiatry—Unexpected vacancy for 2nd or 3rd year resident at Dean's Committee Hospital. Program is a major teaching service of the Yale Department of Psychiatry. The Hospital is fully integrated with Yale School of Medicine. Opportunities for individualized training in Broad range of Inpatient, Outpatient, Day Hospital and Psychosomatic Medicine. For further details contact: Paul Errera, M.D., Professor of Clinical Psychiatry, Chief, Psychiatry Service, V.A. Hospital, West Haven, Connecticut 06516.

Radiology—For sale. Physician retiring. Well established office. Diagnostic Roentgenology. Excellent opportunity for young radiologist. Hospital appointments available. Call New Britain (203) 223-4828.

ANYONE INTERESTED IN THE ABOVE IS ASKED TO CONTACT THE PHYSICIANS PLACEMENT SERVICE, 160 ST. RONAN STREET, NEW HAVEN, CONNECTICUT 06511.

Welcome, New Members

New Haven County

- Thomas T. Amatruda, M.D.**, Waterbury Hospital, Waterbury, Conn. 06708.
- Adolph J. Brink, M.D.**, S.N.E.T. Co., 227 Church Street, New Haven, Conn. 06510.
- Lawrence S. Cohen, M.D.**, 333 Cedar Street, New Haven, Conn. 06510.
- Jack W. Cole, M.D.**, 333 Cedar Street, New Haven, Conn. 06510.
- Earl H. Dearborn, M.D.**, Dome Laboratories, 400 Morgan Lane, West Haven, Conn. 06516.
- Jonathan M. Himmelhock, M.D.**, Yale-New Haven Hospital, New Haven, Conn. 06504.
- Victor W. Hurst, III, M.D.**, Waterbury Hospital, Waterbury, Conn. 06708.
- John Hyland, M.D.**, 200 Westwood Road, Hamden, Conn. 06518.
- Selby C. Jacobs, M.D.**, V.A. Hospital, West Haven, Conn. 06516.
- David P. Johnson, M.D.**, 112 State Street, Guilford, Conn. 06437.
- Chase P. Kimball, M.D.**, 333 Cedar Street, New Haven, Conn. 06510.
- Koretada Kondo, M.D.**, 333 Cedar Street, New Haven, Conn. 06510.
- Paul J. Myerson, M.D.**, Griffin Hospital, Derby, Conn. 06418.
- Carlton R. Palm, M.D.**, 123 York Street, New Haven, Conn. 06511.
- Lawrence T. Purcell, M.D.**, 285 Broad Street, Meriden, Conn. 06450.
- Gaylord H. Rockwell, M.D.**, 789 Howard Avenue, New Haven, Conn. 06504.
- Charles F. Roe, M.D.**, 333 Cedar Street, New Haven, Conn. 06510.
- D. Clint Smith, M.D.**, 135 Whitney Avenue, New Haven, Conn. 06510.
- Robert P. Smith, M.D.**, Gaylord Hospital, Wallingford, Conn. 06492.
- George F. Thornton, M.D.**, Waterbury Hospital, Waterbury, Conn. 06708.
- Kenneth H. Williams, Jr., M.D.**, 333 Cedar Street, New Haven, Conn. 06510.
- John C. vanGilder, M.D.**, 333 Cedar Street, New Haven, Conn. 06510.

Windham County

- William J. Ellzey, M.D.**, 132 Mansfield Avenue, Willimantic, Conn. 06226.
- John F. B. Haney, M.D.**, Box 84, Route 3, Storrs, Conn. 06268.
- David T. Hochberg, M.D.**, Box 690, Danielson, Conn. 06239.
- Julian S. Kaiser, M.D.**, Univ. of Connecticut, Storrs, Conn. 06268.

Fairfield County

Sumner R. Auerbach, M.D., 50 Ridgefield Avenue, Bridgeport, Conn. 06610.
John O. Burris, M.D., Danbury Hospital, Danbury, Conn. 06810.
Thomas F. Coyle, M.D., 226 Mill Hill Avenue, Bridgeport, Conn. 06610.
Michael L. D'Aiuto, M.D., 50 Ridgefield Avenue, Bridgeport, Conn. 06610.
Thomas A. Dwyer, M.D., Candlewood Corners, New Fairfield, Conn. 06815.
Donald M. Hamilton, M.D., 2 Indian Head Road, Danbury, Conn. 06811.
Robert Hasson, M.D., 1 Strawberry Hill Court, Stamford, Conn. 06902.
George L. Kauer, M.D., American Lane, Greenwich, Conn. 06830.
Morgan F. Moore, M.D., 46 Main Street, New Canaan, Conn. 06840.
Joseph M. Murphy, M.D., Greenwich Hospital Assoc., Greenwich, Conn. 06830.
Robert G. Nicholl, D.O., 221 Milbank Avenue, Greenwich, Conn. 06830.
Robert M. Rapkin, M.D., Federal Correctional Institution, Danbury, Conn. 06810.
Frank W. Read, M.D., Ituri Towers, Greenwich, Conn. 06830.
Robert E. Sax, M.D., 10 Washington Avenue, Bridgeport, Conn. 06604.
Vera M. Stallworth, M.D., 1026 Park Avenue, Bridgeport, Conn. 06604.
John J. Tobin, M.D., 17 Old Kings Highway South, Darien, Conn. 06820.
Joshua M. Twersky, M.D., 400 Stilson Road, Fairfield, Conn. 06432.
Granville I. Walker, Jr., M.D., American Can Company, American Lane, Greenwich, Conn. 06830.
Arnold H. Weinstein, M.D., 10 Mott Avenue, Norwalk, Conn. 06850.

Hartford County

Dudley A. Ferrari, M.D., 36 Haynes Street, Manchester, Conn. 06040.
Elliot M. Gross, M.D., 2 Holcomb Street, Hartford, Conn. 06112.
V. Abraham Kurien, M.D., 17 Haynes Street, Manchester, Conn. 06040.
Ian R. Lawson, M.D., 615 Tower Avenue, Hartford, Conn. 06112.
Mary J. R. Marcin, M.D., 133 Wintonbury Avenue, Bloomfield, Conn. 06002.
Edward Milikow, M.D., Mt. Sinai Hospital, Hartford, Conn. 06112.
David F. Mintell, M.D., 124 Hebron Avenue, Glastonbury, Conn. 06033.
Stephen G. Romeo, M.D., 191 Main Street, Manchester, Conn. 06040.
Herbert Silver, M.D., Hartford Hospital, Hartford, Conn. 06115.
Robert Steinhacker, M.D., Mt. Sinai Hospital, Hartford, Conn. 06112.
Marshall Strome, M.D., 2 Holcomb Street, Hartford, Conn. 06112.

Stanley J. Sutula, Jr., M.D., Conn. State Dept. of Health, 79 Elm Street, Hartford, Conn. 06103.
Stephen A. Weiss, M.D., 21 Woodland Street, Hartford, Conn. 06105.

Litchfield County

Francisco B. Abreu, M.D., 20 Candlewood Lake Road, New Milford, Conn. 06776.
Richard V. Munch, M.D., 71 Spencer Street, Winsted, Conn. 06098.

Middlesex County

Eric Gordon, M.D., City Hall, Middletown, Conn. 06457.

Four Drugs Deliver Karate Chop To Cancer

(*JAMA*: 212, 2038, June 22, 1970) Dr. Oscar Miro-Quesada, Jr. of Lima, Peru infused a combination of four cytostatic drugs—mitomycin C, 5-fluorouracil, cyclophosphamide and methotrexate in 5% dextrose in water in 43 “hopeless” cancer patients. They had mammary, bronchogenic, or pancreatic carcinoma who had been treated with surgery radiation or drugs. Of the 43, 80% showed a “good palliative response” without bone marrow depression.

Dr. Quesada also used another immunotherapy method in a hopeless case of breast cancer. He implanted a small piece of tumor from the patient into a subcutaneous area of a healthy volunteer. At 48 hours the rejection reaction begins and the volunteer begins to develop swelling of the leg and fever. On the 6th day after implantation of the tumor tissue, the peak of the rejection reaction, the implant is surgically excised.

Lymphocytes are extracted from the tissue by laboratory methods; then mixed with the blood serum of the volunteer and injected back into the patient. This procedure is safe for the volunteer and has been used on a dying breast cancer case, caused regression of the malignancy and patient is well and working 2½ years since her immunotherapy.—L.H.N.

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SUMMARY OF PROCEEDINGS

HOUSE OF DELEGATES — ANNUAL MEETING

Hartford, Connecticut — April 27, 1971

Reports and Addresses

The House received reports and/or addresses from the President, the Treasurer, the Council, the President of the Woman's Auxiliary and a number of delegates from other state medical societies. The report of the Secretary and the address of the President are published at the end of this summary.

Elections

A full slate of officers, committees, representatives and advisors was elected for the terms prescribed by the Bylaws.

The officers elected are:

President: Frederick C. Weber, Jr., Greenwich
President-Elect: David A. Grendon, Sharon
Vice-President: Sidney L. Cramer, Hartford
Secretary: Louis C. Backhus, Waterbury
Treasurer: Bernard A. Burnham, Waterbury
Speaker of the House: Kenneth F. Brandon, Hartford
Vice-Speaker of the House: Timothy F. Nolan, Greenwich
AMA Delegate: Norman H. Gardner, East Hampton (1/1/72-12/31/73)
Alternate AMA Delegate: Orvan W. Hess, New Haven (1/1/72-12/31/73)
Councillor-at-Large: Morris A. Granoff, New Haven

Principal Actions Taken

Continuing the procedure established several years ago, all business coming before the House was referred to, and heard by, Reference Committees. Then, receiving the report of the Reference Committees, the Delegates took actions as follows:

Reference Committee 1

- (1) *Policy Statements re Peer Review Organization:* Voted to adopt an amended version of the Council-recommended subject statements, as reported by the Reference Committee, as follows:
 - (a) Peer: Within the context of a peer review committee operating under the jurisdiction

of the Connecticut State Medical Society and its component County Medical Associations, the term "peer" means a physician who is a member in good standing of the Society or Association for which he is performing a peer review function. He should have qualifications that enable him to pass judgment on the actions of a colleague on the basis of his knowledge of acceptable standards of practice obtaining at the pertinent level.

- (b) *Reasonable Charges:* The physician is responsible to set his professional charges at levels which, in the community area of his practice, are reasonable in relation to the charges made by others of similar qualifications for similar services and are commensurate with the professionally assessed values of the services rendered.
- (c) *Peer Review Committee Decisions:* When a physician's charges, quality of care or utilization of medical services are questioned by any party legitimately concerned with his rendering of a service to a patient, such question or questions shall be reviewed and ruled upon only by a committee of his peers duly authorized by the Peer Review Organization of the Connecticut State Medical Society and its component County Medical Associations. Subject to further review by appeal bodies, such as may be established, the decisions of the peer review committee shall be binding upon the members.
- (2) *Peer Review Concept and Principles:* The basic concepts embodied in this resolution, submitted by the New Haven County Medical Association, are reflected in the subject resolution adopted by the House of Delegates under (1) preceding.
- (3) *Proposed CSMS Relative Value Scale:* Voted *not* to adopt the subject report and recommendation of the Reference Committee, but to approve the report and recommendations on

the proposed CSMS Relative Value Scale submitted by the Council. The recommendations are as follows:

- (a) That the House of Delegates approve the report of the Committee on Third Party Payments and the accompanying "rough draft" materials as the bases for the publication of an official 1971 CSMS Relative Value Scale, it being recognized that careful editing and general "polishing" will be necessary to prepare the copy in final, publishable form.
- (b) That the House of Delegates authorize the use of \$7,200 previously approved by the Council toward meeting the total costs of publishing the CSMS Relative Value Scale proposed in the Committee's report and distributing copies of same to the membership.

Reference Committee 2

- (1) *Basic Principles for a Proposed Professional Liability Insurance Program for Members of the Connecticut State Medical Society*: Voted to adopt the report of the Reference Committee and the recommendation that the subject report and recommendations of the Council be approved as submitted. The recommendations follow:

- (a) That the House of Delegates approve the principles as the basis for establishing a professional liability program for members of the Connecticut State Medical Society, such program to be developed in cooperation with the Aetna Life and Casualty Insurance Company.
- (b) That the Committee on Professional Liability be authorized to explore possible arrangements with Mr. Joseph Britton and his associates (of New Jersey) to be available to the Committee as consultants, on an as-needed basis, in order to assist the Committee during the further developmental phase of the program, and be directed to make a report to the Council, with recommendations, concerning such possible arrangements.

- (2) *CRMP "Grand Strategy"*: Voted to adopt the report of the Reference Committee which presented a substitute resolution as follows:

RESOLVED: That the House of Delegates of the Connecticut State Medical Society en-

dorse the action of the Council to request the Connecticut Regional Medical Program to revise its "Grand Strategy" and acknowledge the importance of the physician's office in the primary care of patients and as a primary point of patient entry into the delivery system of health care services.

- (3) *CRMP "Third Faculty" Program*: Voted to adopt the report of the Reference Committee and its recommendation as follows:

RESOLVED: That the House of Delegates of the Connecticut State Medical Society join the Council in expressing concern that the implementation of the Third Faculty Program of the Connecticut Regional Medical Program will increase the costs of hospital care services to patients and endorse the action of the Council to urge CRMP "to study this effect of the Program before proceeding further to implement it"; and be it further

RESOLVED: That the House of Delegates, through the Council, request CRMP to substantiate its contention that the Third Faculty Program "should reduce dramatically" hospital care costs to patients by gathering and presenting evidence that is valid in terms of accepted accounting and business practices to indicate the magnitude of the added "hospital operating costs" attributable to the Program and the mechanisms by which reduced costs to patients have been and will be achieved; and be it further

RESOLVED: That the House of Delegates, in expressing legitimate concern about the effects of the Program on the costs of hospital care services to patients confirm the Council's earlier recognition of the potential value of the Program as one of many methods of providing continuing postgraduate medical education and of improving patient care.

Reference Committee 3

- (1) *Connecticut Medical Service, Inc.*: Voted to adopt the report and recommendation of the Reference Committee that the House of Delegates approve the decision of the Council (1/2/71) "not to undertake further exploratory discussions with CMS regarding the possibility of resuming a CSMS-CMS (corporate) relationship".

- (2) *Policy Statement on National Health Insurance*: Voted to adopt the report and recom-

mentation of the Reference Committee that the House of Delegates approve a policy statement on national health insurance submitted by the Council as follows:

The Connecticut State Medical Society believes that no single system of medical care delivery answers the needs of all areas, segments, and individuals in the United States. Prepaid groups, fee for service groups, so-called Health Maintenance Organizations, subsidized groups and clinics, and fee for service private practitioners, all have their place, and wherever possible the patient should have a choice among the various modalities. The doctor, too, should be free to choose how he would practice, as free as those in other trades, businesses, and professions, without penalty in his choice.

The Society believes that monetary assistance from tax funds shared be on the basis of need, no matter the category: food, clothing, shelter, health, etc.

The Society further believes that in a free society, greatest use should be made of private, rather than governmental institutions. To this end, systems of payment by way of insurance, for health needs, should utilize to the fullest existing private insurance sources, already covering more than 175 million people. In substantiation of this belief, attention is drawn to the costs and problems associated with Medicare, which has been funded, regulated and controlled by the Federal government.

For these reasons, the Connecticut State Medical Society supports such proposals as the AMA's "Medicredit" and, with certain reservations as to the kind of insurance to be utilized, the Administration's "Family Health Plan." It must disapprove such proposals as those of the Committee for National Health Insurance, Senator Javits' bill, Representative Burleson's bill and that of the American Hospital Association, the so-called "Ameriplan."

- (3) *Reduction in Medicare Coverages:* Voted to adopt the report and recommendation of the Reference Committee that the House of Delegates adopt a subject resolution as follows:

RESOLVED: That the House of Delegates of Connecticut State Medical Society goes on record as opposing any reduction in medicare coverages and that such opposition be transmitted to appropriate legislators.

- (4) *State Tumor Registry:* Voted to adopt the report and recommendation of the Reference Committee that the House of Delegates adopt a resolution in support of adequate funding of the State Tumor Registry. The resolution follows:

RESOLVED: That the House of Delegates reaffirms its judgement of the State Tumor Registry as being of great value to the people of Connecticut, of the Nation and of the World; and be it further

RESOLVED: That the House of Delegates recommends strongly to the Governor and the members of the General Assembly that adequate funding of the Tumor Registry be included in the State's budget for the ensuing fiscal year.

- (5) *Educational Grants to COMPAC:* Voted to adopt the report and recommendation of the Reference Committee and amendments offered during the Reference Committee's hearing. The substitute resolution follows:

RESOLVED: That the House of Delegates direct the Committee on Public Affairs to increase its liaison activities with the Board of Directors of COMPAC, particularly in the fields of political education and recruitment of COMPAC members; and be it further

RESOLVED: That the House of Delegates direct the Committee on Public Affairs to submit to the Council political education and recruitment projects developed jointly with the Board of Directors of COMPAC, with cost estimates of same, for prior approval by the Council of the proposed expenditures, the total of such expenditures during the balance of 1971 to be determined by the proportionate funding needs of all other activities of the Society.

In addition, it was voted to adopt the Reference Committee's recommendation that the policy of seeking the opinions of the County Medical Associations in conjunction with processing a COMPAC education grant request be rescinded.

Reference Committee 4

- (1) *Awarding of Honorary Degree in Medicine:* Voted to adopt the report and recommendation of the Reference Committee that the House of Delegates approve the bestowing of an "Honorary Degree in Medicine" on John

Franklin Enders, Ph.D., Sc.D., of Boston, Massachusetts, such degree to be conferred on the recipient at the 1971 semi-annual meeting of the House.

- (2) *Continuing Medical Education and CSMS Membership*: Voted to adopt the report and recommendation of the Reference Committee that the House approve an amended version of the resolution recommended for approval by the Council. The amended resolution follows:

RESOLVED: That the House of Delegates supports the concept of continuing medical education as a contingency of continuing membership in the Society and in the component County Medical Associations and proposes the development of a mechanism for the practical implementation of such concept, and that the implementation of this concept be the responsibility of the County Medical Associations; and be it further

RESOLVED: That the House of Delegates charge the CSMS Committee on Postgraduate Education to develop and submit to the Council a system of CSMS-sponsored and/or CSMS-approved programs of continuing medical education designed to make practical the implementation of such concept as primary responsibility of the County Medical Associations.

- (3) *Amendment to the Bylaws re Order of Business, House of Delegates*: Voted to adopt the report and recommendation of the Reference Committee that the House of Delegates adopt an amendment to the Bylaws relating to the "Order of Business" of the House as follows:

House of Delegates

Purpose: To allow the Speaker, or, in his absence, the Vice-Speaker, to arrange the order of business for meetings of the House of Delegates in such manner as to expedite the business of the House by taking into account the amount and nature of the business to come before the meetings.

Article V—House of Delegates

Section 12. Procedure.

(Cut underlined words and add words in capitals).

Par. 1. Order of Business. (The following shall be the general order of business at all sessions of

the House of Delegates:) THE SPEAKER, OR IN HIS ABSENCE, THE VICE-SPEAKER, SHALL SET THE ORDER OF BUSINESS FOR EACH MEETING OF THE HOUSE OF DELEGATES AND SHALL HAVE PUBLISHED IN THE AGENDA FOR THAT MEETING THE ORDER OF BUSINESS TO BE FOLLOWED. THE GENERAL CATEGORIES OF BUSINESS TO COME BEFORE THE HOUSE AT ALL REGULAR MEETINGS SHALL INCLUDE THE FOLLOWING:

Call to Order by the by Speaker

Roll Call

Report of Reference Committee on Credentials
Speaker's Remarks on Appointment of Reference Committees

Reading and Adoption of the Minutes of the Previous Meeting

Introduction of Guests

Reports of Officers

Reports of Committees

Presentation of Awards

Old Business

New Business, and Reports of Reference Committees

Adjournment

At any meeting, (the House), by majority vote, THE HOUSE may change the order of business.

- (4) *Venereal Disease Education*: Voted to adopt the report and recommendation of the Reference Committee that the House of Delegates adopt a resolution as follows:

RESOLVED: That the House of Delegates of the Connecticut State Medical Society urge the State Commissioner of Education to advocate to all local Boards of Education that courses in health education be instituted in the junior and senior high schools of Connecticut, such courses to be designed to acquaint the students with the modes of transmission of venereal diseases and their symptoms and thereby encourage prevention and early treatment.

- (5) *Non-Obstetrical Patients on Maternity Units*: Voted to adopt the report and recommendation of the Reference Committee that the House of Delegates adopt a subject resolution as follows:

RESOLVED: That the House of Delegates of the Connecticut State Medical Society reaffirm the opinion it adopted in 1967, and affirmed in 1968, "that *all* physicians with

admitting privileges granted by a particular hospital for the care and treatment of 'clean cases' on other floors also be allowed to utilize available beds on obstetrical floors, in accordance with the rules and regulations of the Department of Obstetrics and Gynecology of the hospital concerned, if it be approved (by the State Department of Health) for this program"; and be it further

RESOLVED: That the House of Delegates instruct the CSMS Council to implement the positions and purposes of these RESOLVES by forwarding copies of same to: The Governor; the Commissioner of Health and the members of the Public Health Council; the members of the Connecticut Hospital Planning Commission; the State Council on Hospitals; the Chiefs of Staff of Connecticut Hospitals; and the CSMS Committee on Maternal Morbidity and Mortality; and be it further

RESOLVED: That the House of Delegates instruct the CSMS Council to report to the next meeting of the House on the progress that has been made toward implementing said positions and purposes.

In a related action, it was voted to request the CSMS Committee on Maternal Morbidity and Mortality to reconsider its opinion on the admission of non-obstetrical patients to maternity units as stated in its annual report to the House of Delegates and to resubmit a report to the Council on this subject.

- (6) *Annual Report of the Committee on Postgraduate Education*: Voted to adopt the report and recommendation of the Reference Committee that the House of Delegates accept the Committee's annual report as indicating progress toward carrying out the directive of the House (May, 1970) to develop a comprehensive plan for expanding the role of the Society in the field of continuing medical education.

Reference Committee 5

- (1) *Annual Report of the Committee on Cooperation with Connecticut Medical Schools*: Voted to adopt the report and recommendation of the Reference Committee that the House of Delegates accept the Committee's annual report as information and to refer same to the Council for study and appropriate action.
- (2) *Combination Drugs*: Voted to adopt the report and recommendation of the Reference Com-

mittee that the House of Delegates adopt a subject resolution as follows:

RESOLVED: That the House of Delegates of the Connecticut State Medical Society urge the Food and Drug Administration, in its drug efficacy study and implementation program (DESI), weigh carefully those combination drugs which, over years of clinical use, have established themselves as being both safe and effective; and be it further

RESOLVED: That the House of Delegates urge the FDA to ascertain the views of the practicing medical profession before indiscriminate banning of combination drugs is instituted; and be it further

RESOLVED: That the Connecticut Delegates to the American Medical Association introduce a similar subject resolution at the next meeting of the AMA in June, 1971.

Presentations and Awards

Presentation to Retiring President:

In appreciation of his untiring efforts on behalf of the Society and its members during 1970-71, Morris A. Granoff, New Haven, received an engraved silver bowl from Kenneth F. Brandon, Hartford. As he completed his term of office, a Past President's Pin was presented Dr. Granoff by Orvan W. Hess, New Haven.

Presentation to Incoming President:

At the Annual Dinner on Wednesday, April 28, 1971, an engraved gavel, symbolic of the office of president, was presented by Morris A. Granoff, New Haven, to incoming President, Frederick C. Weber, Jr., Greenwich. The oath of office was administered by the outgoing President. The Inaugural Address delivered by Frederick C. Weber, Jr. is published at the end of this summary of proceedings.

AMA-ERF Grants:

Furnished by the American Medical Association's Education and Research Foundation, unrestricted grants were made as follows:

To the Yale University School of Medicine—\$4,589. Accepted by James Comer, M.D., Associate Dean of Student Affairs.

To the University of Connecticut School of Medical—\$3,461. Accepted by William Fleeson, M.D., Associate Dean of Student Affairs.

ADDRESS OF THE PRESIDENT

Morris A. Granoff, New Haven

As my term of office draws to a close, I take this opportunity to express my thanks to many people for the privilege and honor of serving as President of the Connecticut State Medical Society. I thank this House for confirming my election. I thank my many colleagues in the Society—those on the Council and on committees—for the notable contributions they have made to our work during the past twelve months, and I thank the members of our staff who, individually and collectively, have given me valuable assistance and constructive counsel as I have tried to carry out my duties of office in a creditable manner.

It has been a rewarding year for the most part, although not all the mountains that I hoped could be moved have changed their positions noticeably. However, I am pleased to be able to say that considerable progress has been made in several important areas in which I have particular interest.

The Committee on Professional Liability has done an outstanding job in developing, with the cooperation of the Aetna Company, the framework for a Society-sponsored liability insurance program for our members that has much to commend it. In some states, physicians are having extreme difficulty in obtaining malpractice coverage from any source, irrespective of cost. In others, it is obtainable but at a price that is astronomical and bids fair to become prohibitive. Although this address is being composed in advance of our meeting, it is my sincere hope that you will endorse the program's proposed basic principles so that the Committee may finalize the development of this essential insurance protection and make it available to all of us by the early Fall. In conjunction with the program itself, I am equally hopeful that the Committee will plan and put into operation an educational program to inform our members about how to avoid malpractice suits and will initiate discussions with hospital staffs to encourage them to become involved in this problem area since a high percentage of professional liability claims result from services rendered in a hospital setting.

When we discuss the problems of malpractice among ourselves—the vast numbers of groundless claims and the mounting costs of insurance, we are prone to assume that these problems are of concern only to physicians. Yet it is a fact that the Connecticut public also has a considerable stake in whether or not our new program succeeds. In days

gone by, when liability coverage was priced at a hundred dollars or so a year, I doubt that many of us consciously passed this operating expense on to our patients. But when a practitioner today must pay an annual premium that may exceed the rental of his office premises—as is the case in some areas, it is inevitable that his charges must be increased accordingly and yet another inflationary log thrown on the fire of rising health care costs. Hence, it seems to me, a certain amount of public education about malpractice is also very much in order.

Another goal that I set for myself when I took office in 1970 was to try to stimulate Society-sponsored or Society-approved activities in the field of continuing medical education. While the Committee on Postgraduate Education has not yet come up with a complete and detailed plan to enable the Society to fully discharge its responsibilities to (as



President Morris A. Granoff addresses the House of Delegates.

our Bylaws state) "extend medical knowledge, advance medical science and elevate the standards of medical education", an excellent start has been made toward that end. As with the basic principles of the Professional Liability Program, it is my hope that you will endorse the concept contained in the resolution introduced by the Council that recognizes our responsibility to encourage continuing education among our members and charges the Committee on Postgraduate Education to develop practical methods to implement this concept. In my President's Page in last December's issue of the Journal, I attempted to share with the readers some of my personal thoughts on the need—and on the ways and means—for practitioners to keep up with what is new in medicine and medical care. Judging by several thoughtful letters I received in comment, there must be more than a few of our members who feel as I do. Recently, during my attendance at the annual meeting of the New London County Medical Association, I learned that the Association has had an ongoing program of continuing medical education for several years past which has enjoyed a high level of member participation. My informant indicated that the program's success has been due not only to its consistently high quality but also (at least in his opinion) because a substantial enrollment charge is assessed. Perhaps what is sometimes said in jest is close to being a fact—that one's appreciation of things actually *increases* if one has to pay for them.

Peer Review has been with us, in one form or another, for along time. During the years since Medicare and Medicaid became laws, a more sophisticated type of peer review relating to fees, utilization and quality has been developing. In an effort to fulfill the requirements of anticipated legislation relating to National Health Insurance, the Society is planning to set up coordinated Peer Review Organizations at the State and County levels. To make such organizations effective, it is necessary that their decisions be binding on the members, subject of course to appeal when appropriate. If you endorse this concept now, the Society can proceed with its development of a meaningful Peer Review Organization for Connecticut which can qualify for approval under whatever legislation is enacted.

Furthermore, provision for sophisticated Peer Review is an essential to Medical Care Foundations. Foundations, as you may know, are corporations, preferably organized by medical associations, which can process fee-for-service claims filed by physicians

and pass judgment on utilization and quality at the same time. Foundations utilize insurance principles in the operation of their programs. The Hartford County Medical Association has recently organized such a Medical Care Foundation. It will be interesting to observe how successfully it functions. Many of us believe that the Medical Care Foundation is a viable mechanism to preserve fee-for-service private practice for those physicians who prefer this mode of practice. Dr. George Himler, in his Inaugural Address as President of the Medical Society of the State of New York, charged its leadership to develop a Foundation for presentation of the Society's House of Delegates at its next meeting in February 1972. Should the Hartford Association's program prove successful—and I hope it will—it can serve as a prototype for other County Medical Associations, and possibly even for a state-wide Foundation.

During the past year, through the medium of the President's Page in *Connecticut Medicine*, I have presented my ideas concerning the problems facing medicine today. I have been deeply concerned that the Connecticut Regional Medical Program continues to take the hospital-oriented direction it set for itself in 1968. I continued to voice this concern when I recalled a statement attributed to a Sage of the Middle Ages who warned that the gravest of sins is to remain silent when one sees a wrong being done. A basic question is whether or not some Regional Medical Programs (including Connecticut's) are violating the law in some of their activities. A resolution, prepared by me and adopted by the House of Delegates of the American Medical Association at its interim session last December, requested the AMA Board of Trustees to study this matter. As yet there has been no report. The bureaucrats at Regional Medical Program Services contend that if there were violations of the original legislation, the newly-amended legislation now makes those violations legal. Perhaps it will require a "Philadelphia Lawyer" to get an intelligible ruling in this matter but certainly I cannot, without question, accept the offhand statement of a bureaucrat that what he is dedicated to accomplishing, is authorized by an Act of Congress.

In the published "Report of the Council" there is a resolution concerning increased hospital costs resulting from the sizeable salaries paid full-time Chiefs of Services and/or Staff as part of the "Third Faculty Program" of the Connecticut Regional Medical Program. This resulted from an article I wrote, on request, for "*Issues and Insights*", the

quarterly publication of the New Haven County Medical Association. This resolution, among others, prompted a reply from the Chairman of the Advisory Board and Executive Committee of the Connecticut Regional Medical Program. I quote (in entirety, to avoid quoting out of context):

"While the salaries of full-time chiefs do add to hospital operating costs, the Council Resolution fails to consider some of the functions of these chiefs which should *reduce dramatically* the costs of medical care to many patients and to the community-at-large. For example, these chiefs should: (a) stimulate the effective functioning of utilization committees which will reduce the length of hospital stay for many patients; (b) monitor the overall use of laboratory procedures and drugs, especially by interns and residents, to reduce unnecessary usage (c) develop more effective emergency and out-patient services, which will eliminate the need for some hospital admissions and reduce the stay of others; (d) promote the development of optimum home-health services, again reducing hospital stay in some cases and eliminating the need for admission in others; (e) promote the orderly transfer of long-term, chronically ill patients to more appropriate and less expensive patient care settings, etc. Furthermore, (f) the over-all reduction in hospital bed usage which will be produced by these and other measures should, in turn, reduce the demands on the total community for hospital construction.

"While concentrating on the financial impact of full-time chiefs in its resolution, the CSMS Council took no notice of such potential benefits of the full-time chief system as promoting excellent programs for intern and residency training at the community level, in promoting excellent program for continuing education of practitioners and in providing medical leadership to organize studies of community health problems (such as inadequate medical care for people in the inner city) and to chart action programs."

CRMP thus agrees that the Council is correct in its belief that the full-time chief system does increase hospital costs. As for the "functions of the full-time chiefs", I doubt that they are aware of these responsibilities and duties. I also doubt that those employed with the assistance of CRMP funds are organizing their activities to implement these functions. There are hospitals in this state that have had full-time chiefs for several years. Does the experience in these hospitals warrant the claims made for the system? I am reminded of the famous

Professor of Physiology at the University of Chicago, the late A. J. Carlson. "Ajax", as he was affectionately called, would frequently ask "Vott is die effidence?" Well, what is the evidence?

It would seem that a "Renaissance Man" would be required to promote programs for intern and residency training, promote programs for continuing education of practitioners, and provide medical leadership to organize studies of community health problems and chart action programs as well as perform the six other functions which "should" reduce dramatically the costs of medical care. Since, to my knowledge, there are few if any "Renaissance Men" around and since the men being employed, being specialists or subspecialists, should not be expected to be qualified to perform these myriad major tasks, it would appear that this is the type of verbiage (speaking politely) used by the grantees of federal funds to impress the grantors of funds and which neither the grantors nor the grantees really believe. As you may have noticed the word "should" appears many, many times, and the benefits are largely "potential" in nature. No mention is made of the effect the creation of full-time positions has on the medical manpower shortage.

Since it is said that "every cloud has a silver lining" perhaps the fact the Council has received a response to its action is a good omen. Perhaps the Society will now be permitted to participate meaningfully in CRMP activities instead of being expected to rubber stamp approval of the projects or being ignored if approval was not given, promptly and in full.

Several of our members have expressed disappointment that I have not had more public exposure. Frankly, I have not sought it and, I suspect, subconsciously I have tried to avoid it. No matter how unwarranted and contrived on the part of others, Medicine today does not enjoy either good press or a good public image. Television's so-called "documentaries" on health subjects are rarely flattering to the medical profession. The promoters of the most radical schemes for national health insurance are painting such grim pictures of our present system that one begins to wonder if, indeed, there is anything about it that is worth saving or—even worse—whether it may not already have passed the point at which salvation is possible. The news media appear to have developed their own particular "darlings" whose every word is reported as gospel and given featured billing. Medicine's views, on the other hand are often given the "non-

story" treatment and subjected to microdissection, with editors (and sometimes even reporters) exercising the prerogative of commenting adversely on what medical spokesmen say in defense of our present system or in caution against the proposals being advanced by others.

Thus, it seems to me, it is as well for Medicine to maintain somewhat of a "low profile" in the public eye as national health insurance is debated on the Banks of the Potomac. It appears inevitable that some form of universal coverage will come to pass within the next year or so—sooner if it is felt to be politically expedient, or later if it is felt advantageous to be featured as a campaign issue in 1972. I do not mean, however, that we should remain silent as the debate goes on.

As I observed earlier—speaking of professional liability—concern for what kind of a health care system we have is by no means limited to practitioners of medicine. In my opinion, the public—our patients—must share this concern with us, must become informed about the many alternative plans and must let their elected representatives know what they want and what they *don't* want. Almost daily one reads or hears about what the public is "demanding" be done to revolutionize health care in America, and yet in my practice—and I suspect in most others—I do not find patients making such demands. They, as we, are worried by inflation in health service costs as they are worried by inflationary costs in general. But also, they seem in strong agreement with us that freedom to choose among alternatives in obtaining personal medical care is important and should not be denied no matter what changes in our system are made, whether by evolution or by statute.

The question is however, "Who will tell them who is proposing what for whom in all the schemes now being advocated by legislators and professional health care planners? Who will point out to them, in language they can understand, the pros and cons of each of these plans and what its implementation would mean to *them*?" It seems to me that if the public is to get meaningful explanations of what these various proposals are all about, it will have to come in large measure from the nation's physi-

cians. For this reason, I am especially pleased that the Council has directed our Committee on Public Relations to prepare a brochure—or a series of brochures—for distribution to patients in our offices which will present such "facts" concerning philosophy and such "figures" concerning costs of the different plans as will enable them to make an informed judgment as to which—if any—they prefer. I have no doubt that some of our critics will hail such an undertaking as an effort on our part to "propagandize" for maintaining the *status quo*. This will not be our purpose at all and it is my hope that the communications media will join with us in this honest effort to give balanced and factual information to the public on these important issues—important in themselves but of even greater importance to us all in terms of individual freedom. I, for one, believe that there is too much that is good and of proven value in our present system to risk the chance of letting it be taken away as a consequence of our default.

As I conclude this address, I suppose I should issue the more or less traditional and expected warning that many dangerous pitfalls lie ahead for the members of our profession—and I do, without going into specifics. I suppose, also, that I should bemoan the fact that *not* everything that I had hoped could be accomplished during this past year *has* been accomplished—and I do, but quietly and to myself. I am, however, happy to be able to report that at least *some* progress has been made in *some* important areas since I took office in May of 1970 and I invite you to share my satisfaction in the things that have been done. I take no personal credit, as such, for the Society having made any of these gains, but I would like to think I did provide a stimulus—a catalyst—to prompt my fellow officers and committee conferees to take actions where actions were most needed.

I pledge my full support to our incoming President, Dr. Frederick C. Weber, Jr., as he begins *his* year of leadership and wish him well in all that he undertakes. Again, I thank my Connecticut colleagues everywhere for the honor they have given me and for the courtesies they have shown me on many, many occasions.

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38	190.00
40	213.00

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Issue Age	Annual Premium
23	\$221.00
25	223.00
27	233.00
29	248.00
31	261.00
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FIFTY YEAR MEMBERS HONORED



Newly installed President Weber and immediate past President Granoff with honored guests who were recipients of fifty year membership pins: Drs. Carl L. Thenebe, New Hartford; G. Gardiner Russell, Hartford; J. Alfred Wilson, Meriden; Weber; Granoff; Howard S. Colwell, New Haven; George A. F. Lundberg, Manchester; Louis H. Nahum, New Haven.

Six of the eleven fifty year members honored by the Connecticut State Medical Society were present at the Annual Dinner Meeting on April 28, 1971, at the Hilton in Hartford. Each physician was presented with a framed certificate and a fifty year pin by President Morris A. Granoff. As each recipient was introduced, Dr. Granoff gave a brief statement on the individual's professional background.

Those present as honored guests were:

Dr. Carl L. Thenebe, pediatrics, (retired), New Hartford; University of Pennsylvania, 1918; member of the American Academy of Pediatrics, Hezekiah Beardsley Pediatrics Society, New England Pediatrics Society and the American Board of Pediatrics. Formerly on the staff of St. Francis and Mt. Sinai Hospitals.

Dr. G. Gardiner Russell, internal medicine, Hartford; Harvard Medical School, 1919; member of the American Board Internal Medicine and the American College of Physicians. On the staff of Hartford Hospital.

Dr. J. Alfred Wilson, internal medicine (retired), Meriden; Jefferson Medical College, 1919; member of the American College of Physicians. Formerly on the staff of Meriden Hospital: Chairman of the Medical Board, 1944-1949; Emeritus Status, 1969.

Dr. Howard S. Colwell, internal medicine (retired), New Haven; Johns Hopkins Medical School, 1914. Formerly on the staff of the Yale-New Haven Hospital. His son, Bradford S. Colwell, M.D., of Hamden was also present at the dinner.

Dr. George A. F. Lundberg, internal medicine (retired), Manchester; Jefferson Medical College, 1919; Chief of Medicine, Manchester Hospital, 1940-1955. George A. F. Lundberg, Jr., M.D., also practices medicine in Manchester.

Dr. Louis H. Nahum, internal medicine and cardiology, New Haven; Yale University School of Medicine, 1916; fellow of the Council on Clinical Cardiology, American Heart Association, a Diplomate of the American Board of Internal Medicine. Consultant in medicine: Yale-New Haven, St.

Raphael's, Griffin and Middlesex Memorial Hospitals. Dr. Nahum, a lecturer emeritus in physiology at Yale University Medical School, has been editor of *Connecticut Medicine*, the Society's scientific journal, since 1962. Before that time he had been the literary editor.

The following who were not able to attend the dinner will be presented their pins and certificates at a later date:

Dr. Edward N. DeWitt, ophthalmology (retired), Fairfield; University of Pennsylvania, 1917; member of the American College of Surgeons, American Ophthalmological Society, Academy of Ophthalmology and Otolaryngology. Formerly on the staff of the Bridgeport and St. Vincent's Hospitals.

Dr. Stanley H. Osborn, preventive medicine and public health, West Hartford; Tufts University School of Medicine, 1914; member of the American College of Preventive Medicine. Dr. Osborn served as the Commissioner of Health for the State of Connecticut from 1922-1959. During that time he was a lecturer in public health at Yale University School of Medicine.

Dr. Fessendon N. Otis, roentgenology, Bloomfield; Tufts University School of Medicine, 1918; member of the Radiology Society. On the staff of Bradley Memorial Hospital.

Dr. Karl T. Phillips, surgery (retired), Putnam; Tufts University School of Medicine, 1919; member of the American College of Surgeons. Formerly on the staff of Day-Kimball Hospital.

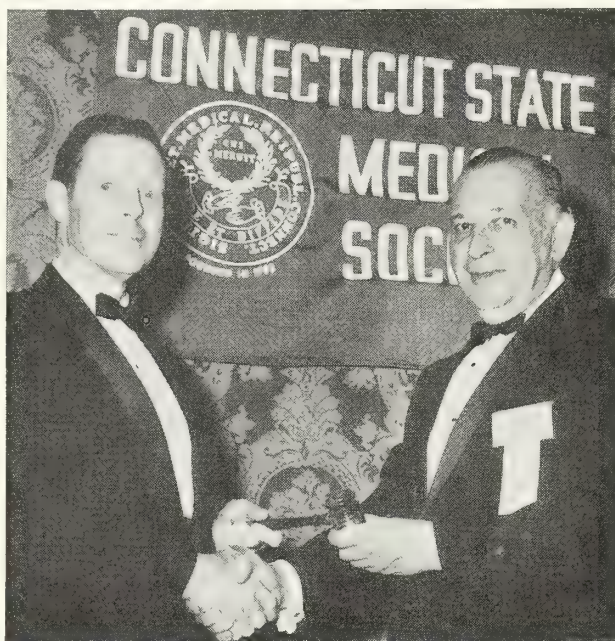
Dr. David Sussler, surgery, Norwich; Fordham University, 1916; On the staff of the William W. Backus Hospital.

INAUGURAL ADDRESS OF PRESIDENT

Frederick C. Weber, Jr.

Since the first meeting of the Connecticut State Medical Society on October 9, 1792, in Middletown, the purposes of the Society have remained the same, namely (quoted from the charter), "to extend medical knowledge and advance medical science, and elevate standards of medical education." This 179th annual meeting has presented its first day of scientific programs and will complete its second day tomorrow. The subject discussed will help us keep pace with the rapid advances in medical knowledge that are being made, year by year—advances that have been stupendous. We have come in 179 years from the practice of medicine by leeches and catharsis to one of scientific sophistication. We have passed through the discovery of the bacterial causes

of disease, asepsis, great public health discoveries in the prevention of disease, the introduction of anesthesia and X-ray, antibiotics, the biochemistry of drug action, the isolation and synthesis of new drugs, the chemotherapy of cancer, and the refinement of each of these great achievements to their present state of clinical and research application.



Outgoing President Morris A. Granoff (right) presents incoming President Frederick C. Weber, Jr., with gavel at the Annual Dinner.

To all of us who are pursuing careers in medicine, this has been the greatest era of scientific development in world history. It is a fortunate stroke of luck for us to be doctors at this time, benefiting from these discoveries as they emerge before our eyes. I can think of no other period in the past when it would have been so exciting to be a part of the medical scene unless it might have been during the Renaissance. It is far healthier for the human race and more satisfying for our profession to be practicing now than even as recently as 25 years ago.

The scientific portion of our annual meeting fulfills in part the educational purposes expressed in words from the Charter just quoted. In order to keep abreast of the newer knowledge in our field, it is necessary and even obligatory for us to continue to study, to read journals, and to attend meetings, seminars, and postgraduate courses. All medical organizations are aware of this need and make provision for continued education in many

ways. Our Society has its annual meeting. The American Academy of General Practice has established minimum hours of study for credits in order to maintain active membership. This is a very forward looking step and is now being given consideration by other medical organizations. The Oregon State Medical Society created standards that must be met in post-graduate education in order to continue as an active member. Your State Society's House of Delegates has agreed that there should be criteria for membership in the County Associations and State Society, based on continuing medical education. I do not consider this step to be in any way coercive but rather the natural response of a governing body, interested in maintaining the proficiency of its members, and their effectiveness as providers of medical care.

The AMA offers "The Physician's Recognition Award", based on a physician's continuing medical education. Credits are given in ten categories which allow sufficient latitude for all types of practitioners to qualify. This Award is a further inducement to encourage physicians to continue to keep up-to-date in their fields. It has been said that the "half life" of medical knowledge is now only five years. This fact alone is an incentive to keep adding to our knowledge.

I mentioned that continuing education would increase the quality and effectiveness of medical care. We have been engaged in this activity for these 179 years and I see no indication that we will deviate from this purpose in the future. A great many other people have been drawn into serious study of the providing of medical care in addition to the medical profession. They are planning and advancing their own solutions to problems. I believe this to be the result of medical progress itself. Acute illnesses of infectious origin have come under excellent control with preventive measures and antibiotics. Also, operative mortality rates have declined to the point where patients need not be worried about the prospect of surgery. Thus, our patients have been relieved of the dread of sudden unexpected catastrophies. Being thus relieved, the public and the medical profession have been able to look upon the provision of medical care from a perspective not heretofore attainable. From this vantage point, it is now possible to see the practice of medicine in relationship to other factors in our current state of progress. Prominent in the present discussion of medical care are the financial, sociological, and educational backgrounds of the patient population:

Under *Financial* are included—cost of hospital, drugs, doctors, extended care facilities, insurance, and the effects of inflation on all these. Under *Sociological*—housing, drug abuse, unemployment, and welfare.

Education or lack of education leads to "crisis care", or no medical care, lack of preventive care, and lack of proper food.

When these factors are looked at in the same perspective with medical care itself, the picture becomes much more complex. It is easy to point out something that is wrong with the health care system from any side of the picture. It is also all too tempting, depending on the point of view of the observer, to point out ways of correcting them. We, therefore, must join with experts in all fields financial, sociological and educational and numerous groups organized to identify and study problems areas and draw up plans to do something constructive to solve these problems. I must add parenthetically that I do not believe the difficulties we face are singular to the medical profession. Government itself has similar problems. The rising costs, the welfare burden, the lack of care in certain communities have created pressure on the local, state, and national administrations to include medical care in their areas of concern and to endeavor to provide it through legislation.

The history of the efforts made to try to solve the financing of medical care is written in the bills brought before Congress beginning with the Wagner Bill in 1939 and culminating in Medicare (P.L. 89-97) in 1965.

The AMA is in Washington in the thick of the 1971 Health Care derby of the 92nd Congress. There are at least 7 bills that call for national health insurance in some form or other. I will not attempt to pick a winner or even to quote any odds. The AMA has its entry, Medcredit and, considering the length of the list of sponsors, it should enjoy a fairly favorable "post position", however, this kind of a race is run with rules that differ from those of the usual sporting contest. Being an early favorite may actually turn out to be a handicap when the politicians start moving into the stretch.

Our Committee on National Legislation keeps us informed of these activities in Washington. However, we cannot be content with simply being informed, awaiting the appearance of new concepts, laws, or programs, and then reacting to accomplished facts. It is incumbent upon our Society to do some of its own planning. This has been taking place. There are a number of proposals in existence



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VITAL STATISTICS

LOCATION: northerly from U.S. Route 20,
West Becket, Mass.
LATITUDE: 42 degrees, 16 minutes, north
LONGITUDE: 73 degrees, 7 minutes, west
ALTITUDE: ranges from 1,560 to 1,995 feet
above sea level
SLOPES: from 3 to 25 per cent, mostly less
than 15 per cent
VEGETATION: mostly wooded, mixed deciduous
and evergreen, some meadowland
HYDROLOGY: three watersheds, two of them
originating on the property
AVERAGE ANNUAL PRECIPITATION: 48 inches
AVERAGE ANNUAL SNOWFALL: 81 inches
PREVAILING WINDS: summer, southwest;
winter, northwest
HOMESITE AVERAGE: range from 4.75 to
6.66 acres
CONDOMINIUMS: 55
ACREAGE IN CONDOMINIUM AREA: 56
TYPE OF ROADS: gravel, except for paved
portion at access
UTILITIES: Electric and telephone, all underground
DEVELOPER: Ponderosa, Inc.
SALES: Towne House Associates, Inc.

the berkshires



low

becket woods

at the present time which are quite different from the usual fee-for-service practice in which most of us are engaged. Some have the characteristic of being prepaid group plans. There is really nothing new about this concept. It has been in effect in the Kaiser Permanente Foundation in California since 1940. A prepaid plan is being introduced in Columbia, Maryland, to encompass a new city of about 14,000 which is expected to reach 100,000 in 10 years with 30-50% of the residents electing the plan. Other plans are being introduced to take care of problems of medical care for the inner city groups. There are such plans in New Haven and Hartford, and one is starting in Boston. Yet another proposal for group health care coverage is the Foundation for Medical Care. Started in San Joaquin Valley, California, the idea has spread and been taken up in numerous other areas of the country. The principal group in Connecticut to undertake the investigation of the Foundation idea is the Hartford County Medical Association. It is also under study in the Town of Greenwich. You can see that in Connecticut we have not been sitting by but are actually among the leaders in planning and implementing more effective methods of health care delivery. It is gratifying to see groups representing the medical profession itself working out the newer plans rather than waiting for others to do it for them, and then—more often than not—having to try to make abstract theories work out in practice.

In this country, since 1939, a large variety of forces, most notably the planners in the national government, have been proposing methods of reshaping our American medical care system. Although many changes have occurred, they have come about gradually, progressively and by evolution. (Medicaid, 1960, and Medicare, 1965). The new proposals have been found to be expensive in operation which may have slowed the pace somewhat. If further change can be left to a gradual, progressive, fiscally sound course, there will be great hope of sound solutions to the problems we have now and those that are bound to arise in the future. If doctors continue to participate in the planning as well as continue to render the up-to-date scientific care the modern physician is capable of in this country today, the public will have no cause for complaint. The pressure for sweeping legislative changes by those who do not see the capabilities of providing care in the doctor's office, the patient's home, in the hospital, or clinic will be markedly reduced. We will have time to try

out all of these methods of dispensing patient care, and will find the best one for a given area of the nation and the population it must serve. This country is too big and the needs of the communities too varied to have one national system that is applicable to every local area. Let us continue to plan, try new methods, and determine to eventually produce a system or systems preferred by our patients in Connecticut.

Report of the Secretary

Reginald C. Edson

This membership report presents the numerical strength of the Connecticut State Medical Society. It is important only because of the individual dedication and integrity of its members. Through united efforts, the future of medical practice can preserve the best of the old and shape the best of the new. It is your participation and your contributions of your knowledge and efforts that are necessary to preserve the continued high quality of medical care that Connecticut has come to accept as a right. The future will be as good as you make it.

Membership Report of the Secretary

FAIRFIELD COUNTY	
Membership—January 1, 1970	1006
New Members	54
Less:	
Deaths	10
Resignations	13
Transfers	3
Non-payment dues	14
	40
Net Gain	14
Membership—December 31, 1970	1020
HARTFORD COUNTY	
Membership—January 1, 1970	1164
New Members	59
Less:	
Deaths	14
Resignations	16
Transfers	7
Non-payment dues	6
	43
Net Gain	16
Membership—December 31, 1970	1180
LITCHFIELD COUNTY	
Membership—January 1, 1970	150
New Members	7
Less:	
Deaths	0
Resignations	2
Transfers	1
Non-payment dues	1
	4
Net Gain	3
Membership—December 31, 1970	153

MIDDLESEX COUNTY	
Membership—January 1, 1970	125
New Members	9
Less:	
Deaths	2
Resignations	1
Transfers	1
Non-payment dues	1
	5
Net Gain	4
Membership—December 31, 1970	129
NEW HAVEN COUNTY	
Membership—January 1, 1970	1042
New Members	48
Less:	
Deaths	14
Resignations	19
Transfers	5
Non-payment dues	10
	48
Net Gain	0
Membership—December 31, 1970	1042
NEW LONDON COUNTY	
Membership—January 1, 1970	218
New Members	8
Less:	
Deaths	7
Resignations	4
Transfers	2
Non-payments dues	1
	14
Net Loss	6
Membership—December 31, 1970	212
TOLLAND COUNTY	
Membership—January 1, 1970	32
New Members	1
Less:	
Deaths	1
Resignations	0
Transfers	0
Non-payment dues	0
	1
Net Gain	0
Membership—December 31, 1970	32
WINDHAM COUNTY	
Membership—January 1, 1970	75
New Members	9
Less:	
Deaths	1
Resignations	0
Transfers	1
Non-payment dues	0
	2
Net Gain	7
Membership—December 31, 1970	82
ASSOCIATE MEMBERS	
New Members	0
Less Deaths	1
Associate members—December 31, 1970	7
TOTAL SOCIETY MEMBERSHIP	
December 31, 1970	3850
Net Gain for year	38

TOTALS	
Fairfield	1020
Hartford	1180
Litchfield	153
Middlesex	129
New Haven	1042
New London	212
Tolland	32
Windham	82
	3850
Associate Members	7
	3857

AROUND THE STATE

New Haven County

Board of Governors Meeting—April 15, 1971

New Haven County Medical Association

The Board of Governors of the New Haven County Medical Association met from 4:35 p.m. to 7:10 p.m. on April 15, under the chairmanship of President James H. Root, Jr. M.D.

Attending were 26 Board Members, 3 guests, 5 local medical society presidents, and the public relations director. A social hour and dinner followed.

Elected Chairman of the Board of Governors was President James H. Root, Jr., M.D.

Elected Chairman of the Board of Censors was Samuel Climo, M.D.

Elected Editor of Issues and Insight was Stewart J. Petrie, M.D.

Appointed Parliamentarian was Louis Backhus, M.D.

Appointed Assistant Parliamentarian was Jerome Freedman, M.D.

Reports were heard and accepted from Councilor Pelz, Associate Councilor Freedman, COMPAC Chairman Burnham, Health Planning Coordinating Committee Chairman Milles, Public Relations Chairman Cappucci, Program Chairman Mancini, Clerk West, and President Root.

Local Society Presidents—All were present. Dr. Chiappinelli of Milford reported a local political workshop, a malpractice seminar and a preliminary study of forming a city wide Milford Group practice. Dr. Coshak of Waterbury reported that through local contributions the citizens of Waterbury have nearly raised their goal of \$185,000. to support a drug day-care center. He elaborated on problems of full time hospital physicians as regards fee schedules, and commented on dwindling attendance at meetings.

Attendance: The Annual Meeting attendance was 293 with 211 dinners served. There are now 9 delinquent members on suspension and only 27 members who thus far have missed 3 meetings.

Actions

A Resolution to enable \$7,500. to the appropriated on behalf of "education" to COMPAC was passed and directed to the Connecticut State Medical Society House of Delegates.

The Health Care Planning Coordinating Committee will meet and prepare letters on the subject of "New Haven's Health Needs" for submission to the neighborhood centers by Doctors Freedman and Milles.

President Root announced the appointment of numerous committees whose membership will eventually be published.

A sum of money up to whatever is reasonably necessary was voted to buy a locked and fire-resistant filing cabinet.

The matters of Dr. Bonner's letter, HMO's and foundations were referred to Dr. Boltax's Third Party Payment Committee.

Meetings by the Executive Committee with the local society presidents and vice-presidents; the hospital chiefs of staffs; and the Meaningful Meetings Committee are in the planning stages.

Respectfully submitted,
William L. West, M.D. *Clerk*

Rapid Correction Of Acidosis And Dehydration Of Cholera With Oral Electrolyte And Glucose Solution

Lancet. 11, 549, September 12, 1970, Richard Cash, et al) Five patients with severe acidosis and dehydration secondary to diarrhea were treated with an oral solution containing NaCl KCl, bicarbonate and glucose. The patients received 1,000 ml per hour of the warmed oral solution during a six hour period.

Four of these had cholera. None had shock. If shock is present, then I.V. fluid is necessary. If not, oral fluid is adequate to combat moderate dehydration and severe acidosis.

The authors treated more than 2,000 patients with oral therapy of whom 1,500 had cholera.

Thus if oral therapy is given at onset of symptoms, you can expect 100 per cent recovery.

The composition of the solution was (mg per liter) sodium 120 bicarbonate 48, cholera 87 and potassium 15 together with 110 m. moles glucose per liter.—L.H.N.

Bacteria And Etiology Of Cancer Of Large Bowel

(M. J. Hill, et al: *Lancet* I: 95, January 16, 1971)

The geographical variations in the incidence of carcinoma of the colon seem to be correlated with variation in the fat content of the diet. It was postulated that intestinal bacteria might be able to produce carcinogens from dietary fats or from bile steroids and that the variations in the incidence of colon cancer might depend partly on differences in the composition of the intestinal bacterial flora brought about by the differences in diet.

Samples of feces from six areas were examined for their content of bacteria and steroids. Feces from people in Britain and the U.S.A. where the incidence of colon cancer is high, had higher counts of bacteroids and lower counts of enterococci and other aerobic bacteria than feces from people in Uganda, South India, or Japan, where the incidence of this disease is low.

Feces from people in the Western countries contained higher concentrations of steroids than those from the African and Eastern countries and the steroids were also more degraded.

The results are consonant with the theories that the intestinal bacteria may be etiologically related to cancer of the colon.—L.H.N.

Increased Concentrations Of Serum Nickel After Acute Myocardial Infarction

(*New Engl. Jr. Med.* 283, 896. October 22, 1970, Sunderman, F. W. et al.) Nickel concentrations were measured by atomic absorption spectrometry in serums collected from 35 patients at intervals after acute myocardial infarction. The highest concentrations were observed during the period from 13-36 hours after onset of symptoms (mean serum nickel 5.4 ± 2.7 μg per liter in patients who had had an infarction and 2.6 ± 0.8 μg per liter in healthy controls less than 0.001).

During the period from 13-36 hours after onset serum nickel concentrations were increased above the normal range in 72 percent of patients with myocardial infarction (p versus healthy controls less than 0.0005).

No significant alterations in the mean concentrations were found in a group of 17 patients with acute myocardial ischemia without infarction, or in a group of 132 consecutive hospital patients with an assortment of diseases (excluding ischemic heart disease).—L.H.N.

Correctable Complications of Neoplastic Disease:

III. - Neoplastic Effusions

Leonard R. Farber M.D.

Pleural, peritoneal, and (to a lesser extent) pericardial effusions are often encountered in patients with neoplastic disease. Approximately 50% of patients with carcinoma of the lung or breast develop pleural effusions, and more than 70% of patients with ovarian neoplasms manifest ascites during the course of their disease. The discomfort caused by massive ascites and the dyspnea secondary to pleural effusions may be the primary cause of symptoms, and effective local control may bring many months of valuable palliation. Rarely will control of effusions, per se, prolong life.

Neoplastic effusions are usually secondary to serosal implants, but may at times be caused by venous and/or lymphatic obstruction. Chylous effusions from lymphatic blockage are seen especially with lymphoma, whereas serosal implants are characteristic of the spread of ovarian and breast neoplasms.

The fluid itself may be classified by its cellularity. At one extreme is the large number of "free-floating" tumor cells associated with minute implants. Contrasting with this is the relatively acellular effusion seen with large serosal implants by solid tumors. Most effusions are intermediate in cellularity.

If systemic treatment (radiotherapy, chemotherapy) is successful in controlling the disease process, then effusions may simultaneously be resorbed. When this is not achieved, symptomatic effusions demand local control even though the disease is progressing elsewhere.

Symptomatic pleural effusions are most effectively treated by obliteration of the pleural space, and this is best accomplished by use of a chest tube with an underwater seal drainage system. Some have stated that drainage *alone* is sufficient to prevent reaccumulation of fluid, but most often a sclerosing

agent is instilled after removal of all the fluid. Occasionally thoracentesis and instillation of a sclerosing agent will suffice, but as complete drainage with approximation of the two pleural surfaces is infrequent, fluid reaccumulation often ensues in a short period of time. Radiation therapy is usually not effective in controlling any but chylous effusions due to mediastinal lymphatic obstruction. Thoracotomy and pleurectomy, with or without decortication, is highly successful but of limited utility because of the morbidity and mortality related to the procedure. This is perhaps best utilized if reaccumulation of fluid is very rapid and difficult to manage by other means, if the fluid is loculated, where pleural involvement is the initial presentation (as with mesothelioma), and where long survival is anticipated.

In the case of peritoneal effusions, one can never achieve approximation of the serosal surfaces to the extent possible with the use of chest tube drainage of the pleural space. Nonetheless, sclerosing agents such as Quinacrine, Au¹⁹⁸, P³², and the alkylating agents especially have been used successfully in preventing ascitic fluid reaccumulation. They do so in spite of the theoretic possibility of causing fibrosis of the peritoneum (plastic peritonitis) which rarely occurs. Malignant ascites caused by ovarian carcinoma has been effectively treated with whole abdominal external radiation, with beneficial results in 40-50% of patients so treated.

The use of radioactive isotopes (Au¹⁹⁸ & P³²) is successful in preventing fluid reaccumulation in about 50% of those treated. Complete drainage is not essential, and for this reason these agents have been frequently employed in the treatment of malignant ascites. However, the lack of ready availability, the radiation hazard to both patient and physician, and other troublesome side effects have made the use of isotopes less frequent than in the past.

DR. LEONARD R. FARBER, V.A. Medical Trainee in Hematology-Oncology West Haven V.A. Hospital and Yale-New Haven Hospital.

When alkylating agents such as Nitrogen Mustard (HN2 and Thio-TEPA are used to control effusions, full systemic doses should be employed (HN2 — 0.4 mg./Kg. or 20-30 mg. total dose, Thio-TEPA — 0.6-0.8 mg/Kg. or 30-60 mg.). Side effects from such agents (nausea, vomiting, marrow depression, etc.) are seen in variable degree. Dosage should be reduced in patients with poor bone marrow reserve, and in those receiving concomitant radiotherapy or systemic cytotoxic chemotherapy. HN2 produces an acute inflammatory pleuritis, with fever, and occasionally results in reaccumulation of fluid within 24 hours of its use. This presents no problem if a chest tube has been left in place, but if not, may necessitate emergency thoracentesis. Thio-TEPA does not cause an acute inflammatory reaction, and hence is preferred for intraperitoneal and intrapericardial use. The lack of acute reactions makes it useful as an outpatient treatment. It should be recognized that intracavitary alkylating agents may prevent reaccumulation of effusions in 50% of patients even if, as is often the case (lung, breast), the tumor is poorly responsive to systemic use of the same drug. In breast cancer, a dose-response curve has been clearly demonstrated indicating that 20 mg. HN2 is superior to 10 mg in preventing reaccumulation of fluid. It would seem logical to use the higher dose in treating patients with other neoplasms as well.

Quinacrine (Atabrine) is a useful sclerosing agent and produces no bone marrow depression. In doses of 100-200 mg. daily for pleural effusions, and 200-400 mg. for ascites, given for 3-5 days, gratifying

responses have been seen in 70% of patients. Its side effects (fever, hypotension, pain, dyspnea, ileus) and necessity for repeated administration limit its use. Tetracycline in doses of 0.5-1.0 Gram has been instilled intrapleurally with control in 50% of patients. Aside from pain on injection, no significant side effects have been noted.

Practically, the treatment of *symptomatic* pleural effusions is best accomplished by chest tube drainage and instillation of an alkylating agent in full doses. This may be repeated as often as once a month. In patients with compromised bone marrow, or who are receiving concomitant cytotoxic agents or radiotherapy, Quinacrine or Tetracycline may be used. Malignant ascites causing symptoms should be treated with Thio-TEPA in full doses following the first paracentesis. This may also be used at monthly intervals as needed. A reasonable alternative, especially with ovarian carcinomas, is whole abdominal irradiation.

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Quotation

Those who are aware of themselves and of what they say to patients and the effects of their pronouncements on their patients and their families are invariably recognized as the best physicians in their communities—Dr. Leo Bartemeier

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Electrocardiogram of the Month:

Food, Drink And The T-Wave

Yale-New Haven Hospital
New Haven, Connecticut

Prepared by
HYMAN M. CHERNOFF, M.D.
Associate Professor of Clinical Medicine,
Yale School of Medicine
Director, Dept. of Electrocardiography
Memorial Unit, Yale-New Haven Hospital

The T-wave represents the terminal more rapid phase of the repolarization process in the ventricles. In the normal state the T-wave is upright in leads 1, 2, VF, and in leads V2-V6 and inverted in lead VR. It may be positive or negative in leads 3, VL, and VI. Changes in amplitude and/or polarity of the T-wave may occur as a result of heart disease and also in the absence of heart disease. Among the many extracardiac factors that may alter the T-wave is the ingestion of large amounts of carbohydrates or ice-cold liquids. The T-wave changes associated with the ingestion of carbohydrate are thought to be related to a transient drop in the serum potassium level as a result of K-ions accompanying glucose into the cells. The T-wave changes following ingestion of ice-cold liquids are undoubtedly due to a lowering of the temperature of the diaphragmatic and apical portion of the left ventricle (the part of the heart that is nearest to the stomach) causing these areas to repolarize more

slowly than normal. Experimental demonstration of T-wave changes resulting from direct cooling of the inferior surface of the left ventricle is clearly noted in Fig. 1 reproduced from a paper by Nahum, Chernoff, and Kaufman.¹ The authors changed the temperature of the inferior wall by applying a chamber to this surface and then circulating hot water to raise the temperature and accelerate repolarization of this region and alternatively cooling this area to slow repolarization. Note that raising the surface temperature of this region increased the T amplitude in leads 3 and VF while cooling it caused deep inversion of the T. Since heating the anterior surface of the right ventricle resulted in T changes in these leads similar to that observed following cooling the left ventricle, the authors concluded that an upright T-wave occurs in leads 3 and VF whenever the left ventricle repolarizes earlier than the right and that an inverted T-wave occurs whenever the left ventricle repolarizes later than the right ventricle.

Fig. 2 represents a similar experiment in a 16 year old healthy youth following ingestion of one glass of ice-water. In the control tracing A the T-waves are normal. Two minutes following ice-water ingestion there occurred a slight lowering of T amplitude in Leads 3 and VF (Fig. 2B). At five minutes following ingestion of ice-water T-VF became inverted and T-3 is further inverted (Fig. 2C). Fig. 2D exhibits return of the T-waves to normal after ten minutes. Note that the greatest change in T occurred in lead VF, the lead that best reflects repolarization potentials from the diaphragmatic surface of the heart. To avoid misinterpretations of electrocardiograms exhibiting abnormal T waves the record should be obtained either in the fasting state or at least two to three hours post-prandial.

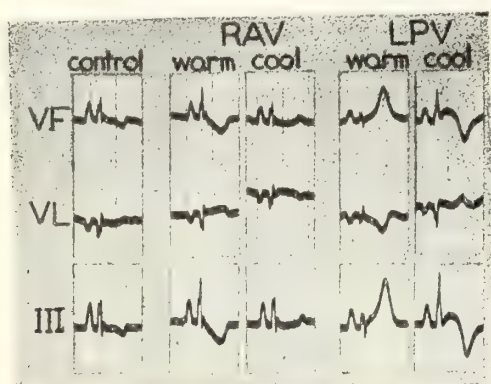


Figure 1

Changes in the T-wave in leads VF, VL and III following heating and cooling the heart surface. 7.2 K. male dog, May 18, 1948. RAV = right anterior ventricle; LPV = left posterior ventricle. Warming RAV makes T-VF more negative, T-VL more positive, and T-III sharply inverted. Cooling RAV makes T-VF more positive, T-VL more negative, and T-III sharply upright. Warming LPV makes T-VF more positive, T-VL more negative, and T-III sharply upright. Cooling LPV makes T-VF more negative, T-VL more positive, and T-III deeply inverted.

Reference

Derivation of Leads I and III in the dog from an analysis of simultaneously recorded leads VR, VL, and VF. *Amer. J. Physiol.*, 1948, 154: 369-390. L. H. Nahum, H. M. Chernoff, and W. Kaufman.

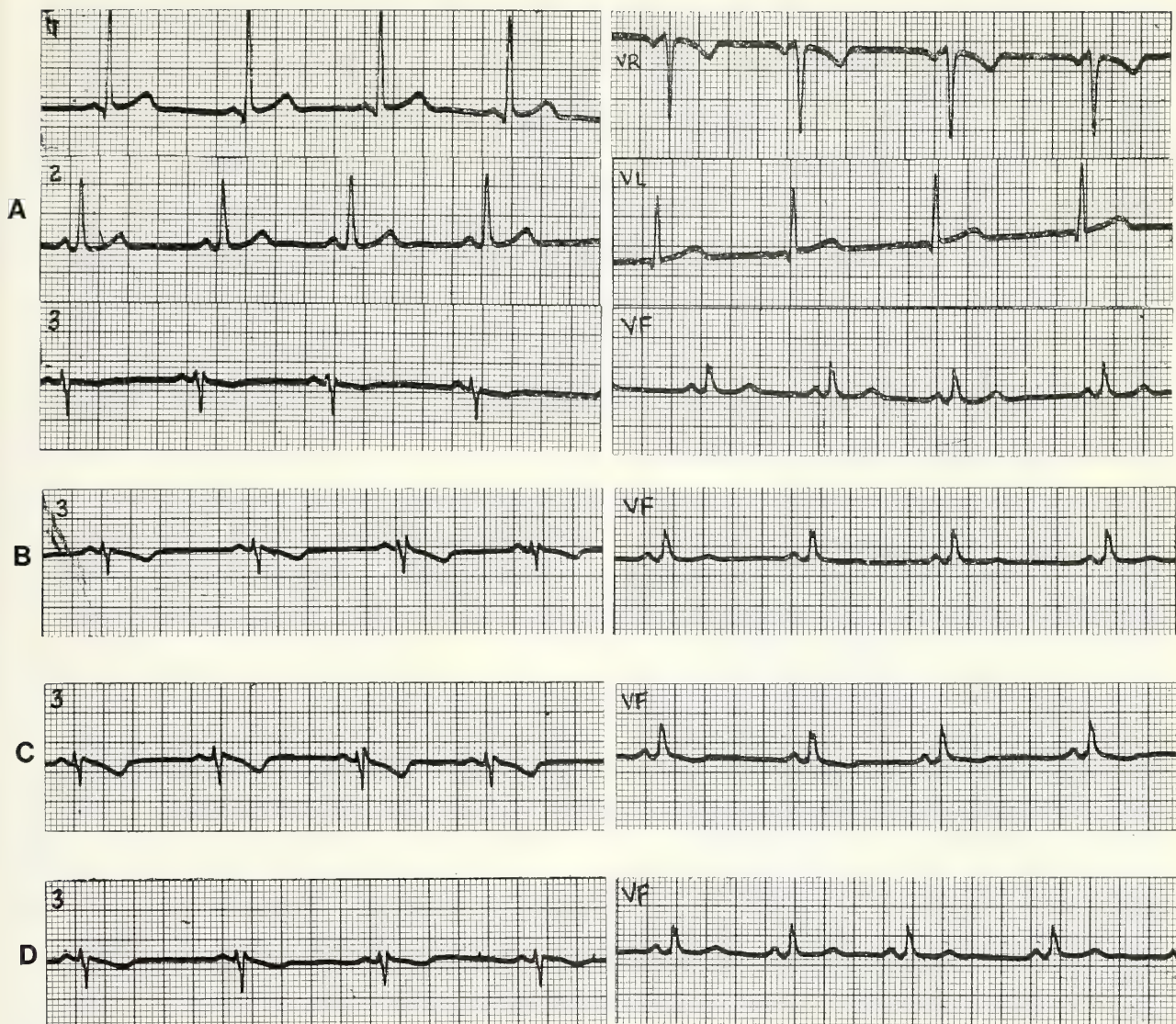


Figure 2

OBITUARY

Harry L. Berman, M.D.
1892-1971

Dr. Harry L. Berman, a long-time member of the New Haven Medical Community, passed from among us on April 7th of this year, after a long and trying illness, which began in January of 1968.



Doctor Berman was a native of Hartford, where he was born on November 22, 1892 and where he received his early education. He came to Yale in 1909 for his college and professional education. At the college level he graduated in 1913, having been elected to Phi Beta Kappa and Sigma Xi. He continued his medical education here and received his M.D. cum laude in 1915.

After an internship at St. Raphael's Hospital, he returned to Hartford, and entered general practice, where he served until 1922. He then returned to the New Haven Hospital, and served as the first resident in the Otolaryngology Service until 1923. On completion of this training period, he entered practice in his special field in this city in 1923. His earnest application to his speciality, and to his patients, earned for him wide acceptance in the community. He served for many years on the staffs of the Yale-New Haven Hospital, St. Raphael's Hospital and the Griffin Hospital in Derby. He held the rank of clinical instructor at the Yale Medical School during this period as well.

Dr. Berman was a member of the Academy of Ophthalmology and Otolaryngology and the New

Haven County Medical Association. A member of the governing board and past president of the county organization, Dr. Berman had also served as staff president and chairman of the governing committee of St. Raphael's Hospital and president of the eye, ear, nose and throat section of the Connecticut State Medical Society.

He is survived by his wife and one son, and two fine grandchildren.

He bore his travail of deterioration in chronic illness, with indescribable fortitude, and had a warm smile for everyone, even when he was seemingly not fully conscious. His passing will be mourned by those he served, his colleagues, and his community. Quite properly it may be said of him, "Well done, noble servant."

Maxwell Lear, M.D.

In Memoriam

Choban, George Michel, Upstate Medical Center, Syracuse, N.Y., 1967. Dr. Choban was a graduate of the Hopkins Grammar School, New Haven, and went on to Harvard University where he pursued the pre-medical program, graduating with the Class of 1963. After receiving his medical degree from the Upstate Medical Center, Dr. Choban served his internship in University Hospital, Minneapolis, Minn. He was a resident in Neuropathology at the time of his death. Dr. Choban died April 18, 1971, at the age of 29.

Meleck, Simon, The London Hospital, 1940. Dr. Meleck was born in London, came to the United States in 1957 and lived in Glastonbury three years. He was a member of the Ambulatory Service at St. Francis Hospital and had a small general practice in Glastonbury. He was also associated with two nursing homes. Dr. Meleck was in the British Navy, serving during World War II and received an M.B.E. Award for his service. He then practiced in England until he came to this country. He was president of the Canadian Society of Hartford, a member of the Connecticut State Medical Society, and the American Medical Association. Dr. Meleck died in London, England, April 9, 1971, at the age of 55.

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PRESIDENT'S ANNUAL REPORT—1970-1971

Connecticut has had a good year. Our membership (923), AMA-ERF donations (over \$2,900), and health career scholarship (\$7,800), have all increased this year. We have five active organized counties and three unorganized counties. Our semi-annual meeting was held in New Haven on October 28th. The film "A Storm, A Strife" from the AMA film library was shown followed by a panel discussion led by a minister and a physician. A fall workshop was held in November. We had films on eye screening and alcoholism followed by round table discussions led by the state chairman who reported on the Philadelphia workshop. Our annual meeting was held in April with Mrs. Willard Scrivnor, national first vice-president, as guest speaker.

Members from two counties have worked as volunteers at our state mental hospital. Our chairman is on the Advisory Council to the State Board of Mental Health. We have an active children and youth chairman, who is on the Connecticut Advisory School Health Council and the Conn. Nutrition Council.

Legislation is becoming a very active committee as our state just voted for annual sessions. Our state chairman and her county chairman, have been manning the legislation reporting bureau at the Greater Hartford Community Council office, which offers its services to all in the state who wish to call in for information. The state chairman is also on the legislation committee of the Connecticut Health League which reviews legislation proposed by the league members requesting active support of the league. We have a representative from our board on the state PAC board.



Mrs. John J. Mendillo, President of the Woman's Auxiliary to the CSMS, addresses the House of Delegates, April 27, 1971.

The community health chairman found the AMA pamphlets helpful and especially noted the value of the Conn. Health Bulletin sent monthly to every doctor's office by the state public health council. Doctor's wives in Conn. continue to work on such projects as: community health boards and drives, public health nursing boards, preschool visual screening, PTA boards, meals on wheels, bloodmobiles, and drug abuse programs. One county staffed a booth at their county health fair demonstrating instruments borrowed from the FDA. The theme was "Medical Quackery".

This year the activities from the new WASAMA chapter were very limited. It is their first year but with the enthusiasm of their representative to the national meeting held last spring in Philadelphia, we hope that she can help the chapter to grow.

Health careers are of great importance in Conn. One county flooded the local teen meeting places with career pamphlets. Many communities held Health Career Days. The \$7,800 given for scholarships this year went to the fields of medicine, nursing, practical nursing, medical technology, cardiovascular technology, cyto-technology, and physical therapy. Recently, the Conn. Health Careers Council was discontinued. In its place the Conn. Institute for Health Manpower Resources is being formed.

Two counties held special events for the foreign intern's and resident's families. A pool party and picnic, an exotic fashion show, continental dinner, international luncheon and a winter concert of medieval carols were held. They also had assistance in finding housing and becoming accustomed to our culture. It is very rewarding to work with our foreign friends.

We have worked hard this year to help our public relations image. One county is assisting their doctors by keeping a clipping service, covering news of the whole county. Due to rising costs our state publication was cut from four issues to two. Our press coverage has improved and so has our relationship with our county medical associations. Once again we had a booth at the Connecticut State Medical Society's annual meeting.

Our five organized counties and our members at large are doing a fine job for all of us. I hope that we are helping to create a "better medical image."

Georgine Mendillo, *President*

Letter To The Editor

Members of the Society are invited to communicate with the Editor expressing their opinions or giving information as to any matter of interest to the members. The Editorial Board reserves to itself the right to select the communications or excerpts therefrom that will be published and to reject others. As with other material which is submitted for publication, all letters will be subject to the usual editing. Address all correspondence to: THE EDITOR, CONNECTICUT MEDICINE, 160 St. Ronan Street, New Haven, Connecticut 06511.

Dear Lou,

"The devil can cite statistics for his purpose."—*Medical Tribune*.

Your challenging editorial, "Tolbutamide: Another View", adds a merited note of confidence in the oral hypoglycemic compounds.

The current Orinase controversy is being resolved also in a "battle of statistics": how to interpret the data of the University Group Diabetes Project. The disputed finding of increased cardiovascular hazard with Orinase and related compounds is not borne out by long *clinical* experience, while the UGDP study itself has been challenged statistically.

I have watched diabetic progress through three major periods; the starvation period, the insulin era, and now the chemical epoch. The oral agents have proved effective in approximately 80% of adult patients with a *low* incidence of side effects in the therapeutic range of 1.0 Gm. daily for Orinase and 0.5 Gm. for Dymelor, Tolinase, and Diabinese.

The management of diabetes with these drugs is smooth and devoid of the marked blood sugar fluctuations and wide metabolic excursions characteristic of insulin. Patients feel better and are less agitated, reflecting a favorable effect and a stabilizing influence on the diabetic state.

The sulfonylureas have given impetus to diabetic investigations, and the antidiabetic compounds now in use are giving renewed hope to over a million diabetic individuals.

Cordially,

Barnett Greenhouse, M.D.

129 Whitney Ave.
New Haven, Conn. 06510

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- Schor, Stanley C.: Meeting of the Advisory Committee on the Care of the Diabetic. Boston. Nov. 30, 1970.
- Feinstein, Alvan R.: *Clin. Pharm. & Therapeutics*, Part I. April 1971.
- Greenhouse, B.: Upjohn Brochure No. 16 in the series of "Observations and Comments from Leaders in Medicine on The Orinase Epoch". Nov. 1958.
- Greenhouse, B.: Clinical Experience with Chlorpropamide. *Annals N.Y. Acad. Sciences*, 74: 643-655. March 30, 1959.

State Physicians Art Group Awards Prizes

The Connecticut Physicians' Art Association 1971 exhibit was held April 27-28 and 29 in conjunction with the 179th annual meeting of The Connecticut State Medical Society in the Hartford Hilton Hotel, Hartford.

The "best of show" award was given to Mrs. John D. Murphy of West Hartford for her ink wash, "Sunset," and The John M. Freiheit Award, given by the New Haven County Medical Association, was awarded to Dr. William Schneider of Rockville for his oil painting, "Moonshine Cove."

In the professional class in oil, Dr. Sophie C. Trent, of Meriden, received the first award for her painting, "Swiss Alps," Dr. William Schneider second, "Monarch." First award winner in the professional water color class was Esther McAlenney, Woodbridge, wife of Dr. Paul McAlenney, for "Chinese Junks," with Dr. Tibor de Cholnoky, Greenwich, receiving second place for "Dunes at Calais," and honorable mention to Madam Wei Chin Chang, Windsor, for "Birds, Bees and Flowers."

Intermediate oil, first award was given to Margaret Hayes, Hamden, wife of Dr. Mark Hayes, for "Phoenix," with Dr. Richard C. Shaw of Hartford receiving second place for "Rocks," and honorable mention to Dr. Eugene Rightmeyer, New Haven for "Surgical Mortality." Intermediate watercolor, first to Nancy Neill, Hartford, for her painting, "Maine," and also second for "Mountain Mist," with Mrs. Lowell Olson, Hamden, receiving Honorable Mention for "Near Lighthouse Point."

Dr. Peter Gram, Manchester, received the first award in the beginner's class in oil for "Fumble," with Dr. Raymond Houle, East Hartford, second for "Fishing Pier-Dawn," and honorable mention to Heidi Sonnen, Hazardville, for "Ronco."

For black and white drawings, the first award went to Mrs. John D. Murphy, West Hartford, for her ink sketch, "Sunrise." In the beginner's class, Mrs. Diane Cipriano Silver, Hartford, daughter of Dr. Anthony Cipriano, Hamden, received first for her ink, "Doodle," and Honorable mention for the charcoal, "Awaiting Death," and Paul H. Barbour, Farmington, second award for his free hand drawing from Gray's Anatomy.

In Photography, beginner's first award was given to Gloria Barbour, Farmington, for "Austrian Alps," and in the intermediate class, Jeffrey Oster, Bridgeport, received first for "Whatever," second

to Dr. Kurt Oster, Bridgeport, "Pots and Pans in Nazareth," and honorable mention to Dr. Paul H. Barbour, Farmington, for "Roman Coliseum," with Keith Laubstein, son of Dr. M. B. Laubstein, Derby, first in the children's class for "Window Rock."

Mrs. Hazel Rentsch, Derby, won the advanced intermediate first award for her stone sculpture, "The Flame of Inspiration," and Jeffrey Barbour, Farmington, first in the beginner's class for his construction, "Project in Time and Space," second to Dr. Allen Silberstein, Middletown, plexiglass and slate etching, "Variations upon a cube," and honorable mention to Mrs. Cecelia Tummillo, Windsor, ceramic "Fishes." Gregory Gram, son of Dr. Peter Gram, Manchester, won first in beginner's sculpture for "Indian Head."

In creative needlecraft, Mrs. F. Schwartz received honorable mention, intermediate class, for her needle point, "The Mayflower," and Beatrice Gordon, Hartford, honorable mention, beginner, for "LaFleur."

In the children's group, the first award went to Bonnie Rentsch, daughter of Dr. S. B. Rentsch, Jr., Glastonbury, for her abstract painting, "Machinery," second to Laura Anderson, daughter of Dr. Albin Anderson, West Hartford, "Happy Fruit," and honorable mention to Shelly Rentsch, also of Glastonbury, for "Abstract," with Bonnie Rentsch also receiving an honorable mention for her papier-mache "The Guitar Player." Robin Frey received first award for her drawing, "Rabbit and Friend," and Becky Frey honorable mention for "Girl with Castanets," with Andria Smith, daughter of Dr. Jay Smith, West Hartford, receiving second award for "Clown."

The chairman of the exhibit was Dr. Eugene Rightmeyer, President of The Connecticut Physicians' Art Association, assisted by Mrs. Orvan W. Hess, Vice President.

DOCTOR—Please take home each copy of your CONNECTICUT MEDICINE! Members of the Woman's Auxiliary have expressed an interest in reading your CSMS Journal.

Meeting Notices

The information on this "notices" page is offered as a service of all specialty groups and allied health agencies in order to publicize postgraduate educational opportunities available to subscribers. The deadline for publication in Connecticut Medicine is the tenth of the month preceding, date of issue. Send copy to: Connecticut State Medical Society, 160 St. Ronan Street, New Haven, Connecticut 06511.

GENERAL

July 16-17—Friday-Saturday

25th Annual Rock Mountain Cancer Conference

Brown Palace Hotel

Denver, Colorado

"Cancers of the Head and Neck" and "The Newest In Chemotherapy"

12 hours A.A.G.P. Credit

Contact: Cancer Conference, 1764 Gilpin Street, Denver, Colorado 80218.

July 26-29—Monday-Thursday

"Recent Advances in Rheumatic Diseases"

University of Colorado Medical Center, Denver.

Contact: A.C.P., 4200 Pine Street, Philadelphia, Pennsylvania 19104.

August 29-30—Sunday-Monday

31st Annual AMA Congress on Occupational Health

Jackson Lake Lodge, Grand Teton National Park, Wyoming.

ELECTROENCEPHALOGRAPHY

September 13-15—Monday-Wednesday

Clinical Electroencephalography

Minneapolis, Minnesota

Contact: American EEG Society, Dr. D. W. Klass, Mayo Clinic, Rochester, Minnesota 55901.

OTOLARYNGOLOGY

October 23-29—Saturday-Friday

Annual Otolaryngologic Assembly of 1971

University of Illinois Hospital Eye and Ear Infirmary, Chicago.

Contact: Otolaryngology, P.O. Box 6998, Chicago, Illinois 60680.

BOOK REVIEW

DEDUCTIVE AND POLYPARAMETRIC ELECTROCARDIOGRAPHY by Demetrio Sode-Pallares, M.D., Gustavo H. Medrano, M.D., Cebdo Bistani, M.D., Jose Pounce DeLeon Jurado, M.D., english translation by Carlo R. Macossay and Marvin Dunn. National Institute of Cardiology, Mexico, 567 pp., 267 figures, price unspecified.

Reviewed by: LOUIS H. NAHUM

This is an unusual book. First because it is so conventional in a period of flux in our understanding of the electrocardiogram. Second because it is so advanced in the last chapter where an heroic attempt is made to correlate biochemical and electrophysiologic data.

In the first conventional portion the authors use Craib's doublet theory and Wilson's dipole theory to form the basic principle of deductive electrocardiography. According to this theory the activation wave produces a positive deflection as it approaches the electrode and a negative wave as it moves away. This is undoubtedly true for a simple dipole in a homogenous conducting medium. But the heart cannot be considered a simple dipole and furthermore activation in endocardial layers as well as intramyocardial layers cannot be detected in the surface field.

The electrocardiogram which reflects differences in potential between two points on the body surface records negativity or positivity that develops over large heart surfaces. The recognition of potentials from the right and left ventricles can now be differentiated in the different leads. This is not dealt with. In apology for the authors, it must be admitted this experimental rather than deductive method of interpreting the electrocardiogram has not yet caught up with most other authors in the field.

The newer knowledge of atrial conduction which has thrown much light on atrial and ventricular arrhythmias is also not present in this work, but probably will in the next addition.

The authors attempt to explain the positive T in the leads because the greater endocardial pressure during systole retards the repolarization of the inner layers. However, since subendocardial potentials are not reflected in the surface field, the more logical explanation that the inferior heart surfaces are warmer and therefore repolarization here is faster than other surfaces are not considered.

Posterior hemiblock is not illustrated. The theory of arrhythmias which requires knowledge of the contribution from the autonomic system is not discussed. There are minor matters such as on Page 112 fig. 57 is called 47, and fig. 58 RBBB is in left LBBB section.

The last portion dealing with the biochemical bases of the electrocardiogram is a masterful treatment of a new field in which Meerson in the Soviet Union and the authors have played a major role in advancing our knowledge: out of their work has come a fruitful suggestion on saving the hypoxic myocardium in patients with acute infarction. The field is just beginning, but all electrocardiographers must read this book if only to become familiar with an important new field in electrocardiography.

Connecticut Regional Medical Program

From its earliest planning activities, CRMP has envisioned a series of affiliations between the Yale-New Haven Medical Center and a number of Community hospitals in Southern and Southwestern Connecticut and between the University of Connecticut Health Center and various community hospitals in Northern and Eastern Connecticut. These affiliations should have the following educational benefits: promote new and expanded opportunities for training medical students; improve the quality and scope of intern and residency programs; and improve the quality and expand the scope of continuing education programs for practicing physicians. They should also stimulate medical research activity in the community setting. Perhaps most important, the closer linkage between university and community should encourage better patient care for many "problem" patients.

A story by Ned Thomas in the February 19, 1971 issue of the *New Haven Register* is quoted in part below to indicate an important recent development in this field:

Three Bridgeport hospitals today affiliated themselves with the Yale School of Medicine—a step aimed at combating the national crisis in the delivery of health care.

The hospitals involved include the Bridgeport Hospital, the Park City Hospital and St. Vincent's Hospital.

Dr. Redlich said at a meeting of the four institutions announcing the affiliation:

"We have common objectives in health, but we also have individual responsibilities as institutions. By working together in a regional partnership we feel that each institution will be able to do its own job—whether patient care, teaching or medical research—more effectively, and that all four institutions will be encouraged to think imaginatively about solutions to regional and national health problems.

"This framework for cooperation is aimed specifically at the interest of patients served by the three Bridgeport hospitals, at physicians in this region who wish to have available additional opportunities for their post-graduation education, and at the possibility for cooperative work in

clinical research, as well as research into better means of delivery of health care. Dr. Redlich sees the affiliation as also being of help to local colleges in the development of programs for health personnel training. In addition, he said, health education center areas will allow more opportunities for joint planning ventures of hospitals with community agencies, and will be a logical area for the development of clinical and health care research." CRMP has taken an active role in facilitating talks on affiliation and has sought to strengthen high quality patient care by promoting co-operative regional arrangements between health institutions.

The latest signings bring to nine the number of community hospitals in southern and South Western Connecticut which have made formal linkages with the Yale School of Medicine during the past year. In addition to the three Bridgeport hospitals, Yale has entered into preliminary affiliations with Griffin (Derby), Danbury, St. Mary's (Waterbury), Waterbury and Lawrence and Memorial (New London). Yale also has developed a full affiliation with St. Raphaels (New Haven).

Similarly, in the northern tier of Connecticut, the University of Connecticut School of Medicine has now entered into affiliation agreements with five community hospitals and "allied" agreement with six others. The five affiliated hospitals are Hartford, St. Francis and Mt. Sinai (all of Hartford), New Britain General, and Middlesex (Middletown). The six allied hospitals are Charlotte Hungerford (Torrington), Meriden-Wallingford and World War II Veterans Memorial (Meriden), Manchester, Rockville and Sharon.

Exploratory conversations between the two university health centers and other community hospitals, looking toward future affiliation, are currently in process.

Henry T. Clark, Jr., M.D., *Director*

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Science News

Intestinal Absorption Of Radiocalcium— 47 After Treatment With Oral Estrogen —Gestagens In Senile Osteoporosis

(*British Med. Jr.*, 4, 30, October 3, 1970) Intestinal absorption of radiocalcium was measured in 15 post-menopause women with osteoporosis before and after six months treatment with an oral estrogen-gestagen combination.

Comparison with a control group indicated a significant improvement in intestinal absorption after treatment although there is no evidence that estrogens have an anabolic effect on human bone. These results indicate that they affect the intestinal absorption of calcium.—L.H.N.

Drs. Page and Pickering Receive Stouffer Prize

(*JAMA*: 214, 45 October 5, 1970) Dr. Irvine H. Page and Sir George Pickering won the \$50,000 Stouffer Prize. Dr. Page was honored for his early recognition of hypertension as a disease amenable to treatment, the discovery of angiotensin and serotonin, clarification of the neuroendocrine system's role in hypertension and for the statesmanship in medical science. He was director of the Research Division of the Cleveland Clinic Foundation for 21 years.

DDE thins Eggshells of Captive American Kestrels

(*Nature*, 227, 739, Aug. 15, 1970). Egg shell thinning has been reported to be caused by DDE ingestion in 27 British peregrine falcon eggs. High levels of DDE have also been reported in 7 peregrine eggs from Northern Canada.

DDE-induced thinning of Kestrel egg shells in a controlled experiment by these workers further strengthens the hypothesis that this chemical is an important factor in egg shell thinning in wild raptorial and fish-eating birds.—L.H.N.

Acute Treatment Of Hypercalcemia With Furosemide

(*New Eng. J. Med.*, 283, 836, October 15, 1970, Suki, W. N. et al) Furosemide increases calcium excretion in direct proportion to sodium excretion. This was observed in 8 patients with serum calcium levels ranging between 12.3 and 18.4 mg per 100 ml.

Serum calcium was reduced to normal in three patients and was normal in another three. In another two serum calcium fell from 18.4 to 14.6 and from 18.0 to 14.8.

The decrease was the consequence of the excretion of 0.7 to 2.7 g of calcium in the period of diuresis. Magnesium losses were considerable and had to be replaced. The careful replacement of water and electrolyte losses however is essential if this therapy is to be safe.—L.H.N.

Potentiation Of Warfarin-Induced Hypoprothrombinemia By Chloral Hydrate

(*New Engl. J. Med.* 283, 827, October 15, 1970, Sellers, Edward M., Koch-Weser, Jan) During therapy with chloral hydrate one of its major metabolites, trichloroacetic acid accumulates in plasma to more than 80 mg per liter. This acid is highly protein-bound and displaces warfarin from binding sites on plasma albumin at 3 and 37 C.

The resulting increase in the concentration of free plasma warfarin leads to a 25 per cent shortening of the biologic half-life of warfarin. During chronic warfarin therapy the trichloroacetic acid-induced increase in free plasma warfarin also potentiates the depression of vitamin K-sensitive clotting factor synthesis in the liver.

Administration of 1 g of chloral hydrate daily for one week increases the hypoprothrombinemic effect of warfarin by 40-80 per cent. Chloral hydrate must be used with caution in patients receiving oral anticoagulants.

When chloral hydrate therapy is begun a reduction in warfarin requirement should be anticipated in order to prevent excessive hypoprothrombinemia.—L.H.N.

Initial Management of Acute Poisoning

Before starting therapy for acute poisoning, the physician should try to determine whether a toxic dose of a truly toxic product was ingested. Since most poisoning occurs in children under five years of age, a reliable answer to this question is often not available, but when it is, the risk of overtreatment is minimized and successful management is more likely. Overtreatment, whether by induction of vomiting or the use of antidotes, sedatives, or stimulants, can do more damage than the poison itself. Furthermore, if a corrosive agent was ingested, vomiting induced by any means is likely to increase the injury to the esophagus. If a hydrocarbon was ingested, clinicians differ as to whether vomiting should be induced or the stomach lavaged; because of the risk of aspiration pneumonia, most Medical Letter consultants do not recommend induction of vomiting or gastric lavage when hydrocarbons were ingested.

Ipecac

With most poisons it is important to remove the unabsorbed portion from the stomach, and this is best accomplished by inducing vomiting. The patient should drink one or two glasses of warm water and then gagging should be induced with a finger. Whether or not vomiting results, since it is usually incomplete, syrup of ipecac should then be administered (one tablespoon for children; about a teaspoon more for adults); this dose should be repeated—once only—in 15 to 30 minutes if emesis does not occur. Because ipecac is cardiotoxic, no more than two doses should be given.

Apomorphine

Subcutaneous administration of apomorphine usually brings on prompt vomiting. Since it can produce respiratory depression, however, it should not be given if the patient is comatose or if respiration is slow and labored. The recommended subcutaneous dose is 5 or 6 mg for adults or 0.07 mg/kg for children. Water should be given beforehand, orally or by nasogastric tube. Although ipecac is more accessible for home use, apomorphine has the advantage of more rapid action, and it is more certain to induce emesis. Some clinicians use apomorphine before resorting to gastric lavage if two doses of syrup of ipecac have not been effective, since emesis is more effective than lavage in removing gastric contents.

Levallorphan tartrate (Lorfan), a narcotic antagonist, rapidly terminates the emetic effects of apomorphine and helps to diminish any subse-

quent respiratory depression. The usual dose of levallorphan is 0.02 mg/kg intramuscularly, given after vomiting has started.

Gastric Lavage

If vomiting cannot be induced and the poison was not corrosive, the stomach should be lavaged. If the patient is in coma, he should be placed on his left side with the head lower than the rest of the body to minimize aspiration. An endotracheal tube should be available for use with suction if aspiration should occur.

The use of a double lumen tube (such as one made by the U.S. Catheter and Instrument Corporation, Glens Falls, New York) to deliver fluid and to aspirate simultaneously or separately, allows thorough gastric lavage to be done in as little as five minutes. Either tap water or a hypotonic saline solution can be used for the lavage; only about two ounces should be introduced at one time so that passage of the poison into the upper intestinal tract will be minimized.

Lavage should be repeated about 10 times or until the returned fluid is clear. Separating the first washing from the others is helpful for laboratory analysis. At the completion of lavage, activated charcoal (see below) can be instilled through the tube and allowed to remain in the stomach. Before the catheter is withdrawn, either it should be pinched off or suction maintained in order to prevent aspiration of material into the lungs.

Activated Charcoal

Activated Charcoal USP is a potent adsorbent or inactivator of many poisons (but not cyanide) and is effective if given before much absorption of the poison has taken place. It should be administered, mixed with water to a soupy consistency, after vomiting or gastric lavage. The usual dose of activated charcoal is 10 to 50 Gm, depending on the amount of poison ingested.

Reprinted from the Medical Letter On Drugs And Therapeutics, New York, N.Y., Vol. 13, No. 9, April 30, 1971.

CORRECTION

In the paper titled "The Practicing Physician, The Tuberculin Reactor and Isoniazid" by Reginald C. Edson, M.D. which appeared in the April 1971 issue of *Connecticut Medicine*, the following correction should be made, on page 234, Table 1, upper right hand figure, the number 18,000 in step II, should be 1,800.

Connecticut Medicine

MANUSCRIPTS

Manuscripts, including references or bibliography, must be typewritten, double-spaced on white paper 8½ x 11 inches with adequate margins on firm paper. The original copy, not the carbon copy should be submitted. Carbon copies or single spaced manuscripts will not be considered. Authority for approval of all contributions rests with the Editorial Board, and the Board reserves the right to edit any material submitted. Receipt of manuscripts will be acknowledged and unused manuscripts returned. Accepted manuscripts become the permanent property of the JOURNAL and may not be reprinted elsewhere without permission from both the author and CONNECTICUT MEDICINE. The author is responsible for all statements made in his work, including changes made by the copy editor.

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The first page should list title, the author (or authors), degrees, hospital positions and any institutional or other credits. References should conform to the usual style of the JOURNAL (listing name and initials of author, title of article, journal, volume number, first and last pages and year), and should be cited numerically in the order in which they appear in the text; the number should be limited to the absolute minimum.

LENGTH OF ARTICLES

Ordinary articles should not exceed 3,000 words (approximately 3 printed pages). Under exceptional circumstances only will articles of more than 4,000 words be published.

ILLUSTRATIONS

Illustrations should be numbered consecutively and indicated in the text. The number, indication of the top, and the author's name should be attached to the back of each illustration. Legend should be typed, numbered, and attached to each illustration as well as typed on a separate sheet. Photographs should be clear and distinct; drawings should be made in black ink (preferably India ink) on white paper. For half tones, glossy photographs should be submitted. CONNECTICUT MEDICINE will bear the cost of printing two cuts accompanying manuscripts submitted for publication. The cost of printing more than two cuts must be borne by the author.

NEWS

Our readers are requested to send in items of news, also marked copies of newspapers containing matter of interest to physicians. Letters intended for publication should be marked "For Publication." We shall be glad to know the name of the sender in every instance. All copy should be received one month prior to the expected date of publication.

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All advertising copy of products approved by the Advertising Committee of the State Medical Journal Advertising Bureau of Chicago shall be accepted for publication unless such copy is in conflict with official policies of the Connecticut State Medical Society. Non-Bureau advertisements in this issue have been reviewed and found to comply with the principles of advertising of the State Medical Journal Advertising Bureau, Inc. The acceptance of advertisements does not necessarily imply endorsement of any product or service by CONNECTICUT MEDICINE.

Material other than original articles should be received not later than the 10th of the month PRECEDING date of issue.

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Communications should be addressed to Louis H. Nahum, M.D., Editor, CONNECTICUT MEDICINE, 160 St. Ronan Street, New Haven, Conn. 06511. Telephone 865-0587.

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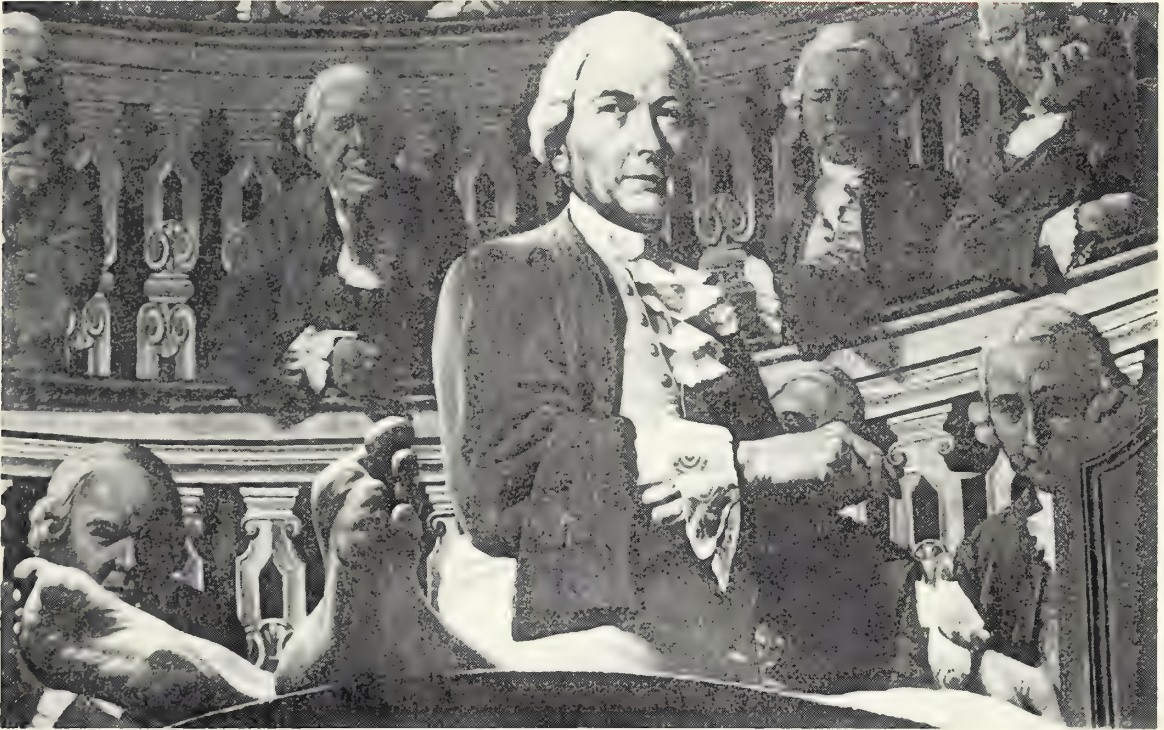
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Morgagni And Pathologic Anatomy

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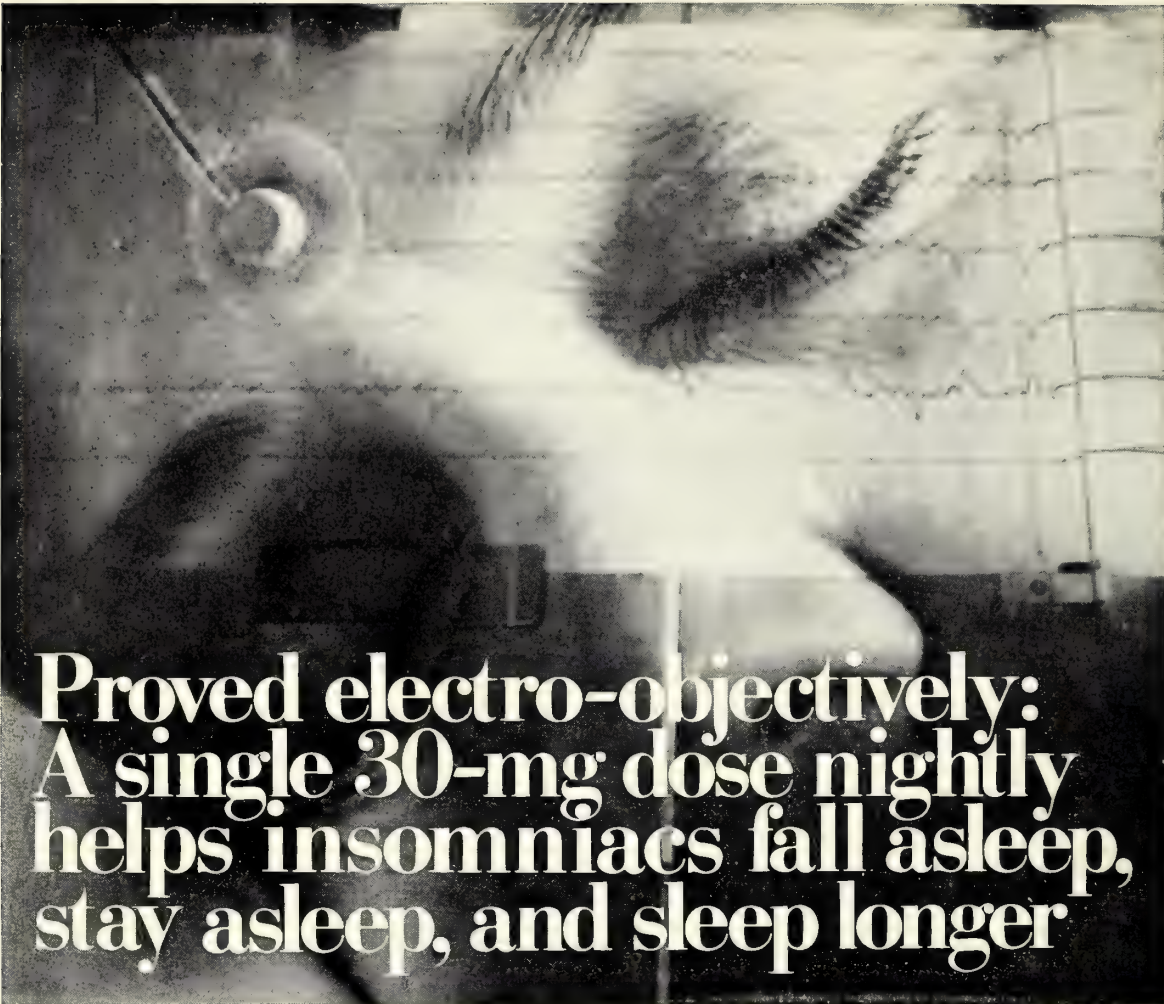
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Fifty-three controlled studies using a paired-night, double-blind crossover design have evaluated Dalmane clinically. In the majority of these, Dalmane (flurazepam HCl) significantly reduced sleep induction time and increased sleep duration. Dalmane and a placebo were alternated on successive nights in 2010 insomniacs, 1706 of whom were studied for a single night-pair, and the remainder for as many as fifteen paired-nights. A patient preference for Dalmane was apparent in the paired-night studies.

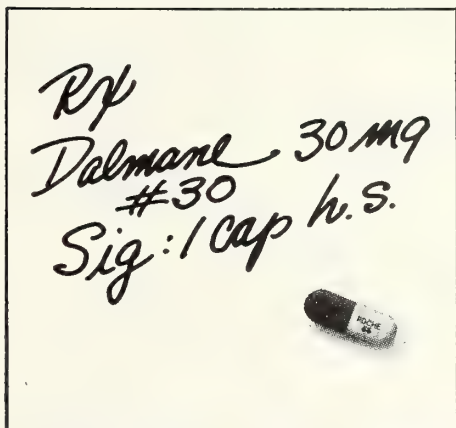
Dalmane was also preferred to certain hypnotics in two separate preference studies. In each of two double-blind studies, Dalmane 30 mg retained effectiveness for the total period of seven consecutive treatment nights, according to subjective/objective evaluations.

In summary, Dalmane is useful in all types of insomnia characterized by difficulty in falling asleep, frequent nocturnal awakenings and/or early morning awakening. It can be used effectively in patients with recurring insomnia or poor sleeping habits, and in acute or chronic medical situations requiring restful sleep.

Dalmane (flurazepam HCl) is generally well tolerated

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References: 1. Kales, A., *et al.*: "Effectiveness of Sleep Medications: All-Night EEG Studies of Hypnotic Drugs," in *Proc. 7th Internat. Cong. Electroencephal. and Clin. Neurophysiol.*, San Diego, Calif., Sept. 13-19, 1969. 2. Kales, A., *et al.*: "Psychophysiological and Biochemical Changes Following Use and Withdrawal of Hypnotics," in Kales, A. (ed): *Sleep: Physiology and Pathology*, Phila., Lippincott, 1969, p. 331. 3. Data on file, Medical Department, Hoffmann-La Roche Inc.



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Contraindications: Known hypersensitivity to flurazepam HCl.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. Caution against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Use in women who are or may become pregnant only when potential benefits have been weighed against possible hazards. Not recommended for use in persons under 15 years of age. Though physical and psychological dependence have not been reported on recommended doses, use caution in administering to addiction-prone individuals or those who might increase dosage.

Precautions: In elderly and debilitated, initial dosage should be limited to 15 mg to preclude oversedation, dizziness and/or ataxia. If combined with other drugs having hypnotic or CNS-depressant effects, consider potential additive effects. Employ usual precautions in patients who are severely depressed, or with latent depression or suicidal tendencies. Periodic blood counts and liver and kidney function tests are advised during repeated therapy. Observe usual precautions in presence of impaired renal or hepatic function.

Adverse Reactions: Dizziness, drowsiness, lightheadedness, staggering, ataxia and falling have occurred, particularly in elderly or debilitated patients. Severe sedation, lethargy, disorientation and coma, probably indicative of drug intolerance or overdosage, have been reported. Also reported were headache, heartburn, upset stomach, nausea, vomiting, diarrhea, constipation, GI pain, nervousness, talkativeness, apprehension, irritability, weakness, palpitations, chest pains, body and joint pains and GU complaints. There have also been rare occurrences of sweating, flushes, difficulty in focusing, blurred vision, burning eyes, faintness, hypotension, shortness of breath, pruritus, skin rash, dry mouth, bitter taste, excessive salivation, anorexia, euphoria, depression, slurred speech, confusion, restlessness, hallucinations and elevated SGOT, SGPT, total and direct bilirubins and alkaline phosphatase. Paradoxical reactions, e.g., excitement, stimulation and hyperactivity, have also been reported in rare instances.



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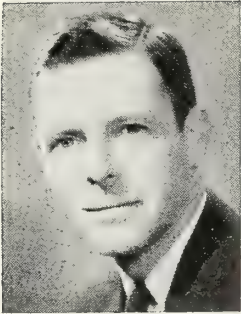
CONNECTICUT MEDICINE is the of-
ficial publication of The Connecticut
State Medical Society, a voluntary
non-profit association, organized for
scientific and educational purposes,
and is published monthly for members
of the Society. Address all communi-
cations to: CONNECTICUT MEDI-
CINE, 160 St. Ronan Street, New
Haven, Connecticut 06511, Telephone
865-0587.

Subscription rate for non-members
\$15.00; Student-Members, interns and
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PRESIDENT'S PAGE



Interest in the delivery of medical care has commanded the attention of every segment involved, from the private practitioner, his organized medical representatives, the hospitals and third party payors, to the state and national government levels. It would be natural to assume that some beneficial change would take place with all that talent focused on a problem. The inception of a "Foundation for Medical Care" in California in 1954 did not create much of a ground swell of popular appeal elsewhere until the national government moved in to the health care business with Medicaid and Medicare. Then doctors began to realize that here was a system in which they could be the organizers and managers, and maintain their autonomy in the care of the patient on a group basis. They found that they could also accommodate the concept of prepaid care, which was also being promoted by federal planning agencies. So the two sides, the providers and the payors, began moving in the same direction. This movement has progressed in Connecticut to the organization of a Foundation by the Hartford County Medical Association which is now in the process of recruiting physicians. Another Foundation is in the process of being formed in Greenwich, and another county (Litchfield) has signified its willingness to join with Hartford County if mutually advantageous.

The payors for health care, especially if claims are in the range of Medicare and Medicaid figures, are naturally interested in efficient care at a budgetable amount. Therefore, there has been intense interest in Foundations on the part of the Department of H.E.W. In recent months the Administration has used the term "Health Maintenance Organizations" (H.M.O.'s) to describe a group mechanism which will provide comprehensive care for patients, especially under Medicare. Since there is at present no law defining H.M.O.'s, their scope and structure are subject to interpretation and can include all the hoped-for advantages the government would like to see provided, especially prepayment of fees and a lowering of cost as a result of prevention of illness. Any organized group of doctors operating within a Foundation or under the new name of an H.M.O. should represent the physicians in the area and provide the kind of care needed by the patients they have planned to serve. Such a program would be responsive to local needs and supported by the interested parties. If such a system was in the planning stage or in operation (and many already are), the Administration could not so readily impose a monolithic system universally.

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Twin Transfusion Syndrome : Treatment By Reciprocal Postnatal Phlebotomy and Transfusion

Jack G. Shiller, M.D. and Sara D. Winter, M.D.

The twin transfusion syndrome, wherein one twin bleeds antenatally into the other through vascular anastomoses in a monochorionic placenta, has been well documented. Klingberg¹ in 1955 described the first case in which both twins received therapy. Since that time there have been several reports of cases in which one or both twins were treated with appropriate transfusion or venesection, or exchange transfusion.²⁻⁸ Valaes and Doxiadis⁹ in 1960, and Rosenquist¹⁰ in 1963, described the treatment of such twins by withdrawal of blood from the umbilical vein of the polycythemic twin and direct transfusion of this non-anticoagulated blood into the umbilical vein of his anemic twin. Others mention the logic of this procedure, but it is apparently not often utilized. Since it has been shown that the incidence of this syndrome may be one in seven twin births, and the survival rate for both twins may be as low as 21 per cent,¹¹ the following case is reported to illuminate the syndrome once more, and to describe a logical variant in the treatment which we have not seen previously reported.

Case Report

Twin girls were born to a 35-year-old para III gravida IV Caucasian woman (blood group A, Rh positive) after an uneventful 39-week gestation and an uncomplicated, spontaneous delivery. Both twins presented in the vertex position, two minutes apart, after approximately two and three-quarter hours of first stage and 15 minutes of second stage labor.

The gross dissimilarity of their appearance, documented by the data obtained and enumerated in Table I, led us to undertake immediate phlebotomy of twin B and transfusion of twin A. Our phlebotomy calculations, based upon an assumed blood volume of 80 ml/kg of body weight, and the known hematocrit, were performed using the assumption that blood volume would be restored following phlebotomy, and that a hematocrit of less than 70 percent would be safe. Transfusion calculations were made using standard recommendations for transfusion of neonates with packed red blood cells (15 ml/kg).

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A 250 ml blood donor collection bottle containing 37.5 ml of ACD solution* as the anticoagulant was prepared by removing 32 ml of the anticoagulant solution. The phlebotomy was then performed on twin B via the umbilical vein using a standard exchange transfusion set-up with aseptic technique, the blood being transferred to the prepared donor bottle. After routine type and cross match procedures, twin A was transfused via the umbilical vein with twin B's blood. Both twins subsequently did well and required no other therapy.

The placenta was monochorionic-diamniotic and weighed 790 grams. Approximately 3/5 of the placenta appeared to belong to the recipient twin and 2/5 to the donor. The fetal vessels on the recipient side were greatly engorged, whereas those on the donor side were noticeably smaller in calibre. Attempts to demonstrate an arteriovenous shunt by injection of dye into the fetal vessels were unsuccessful, although an artery-artery anastomosis was demonstrated. Microscopic examination of sections of the placenta showed considerable vascular engorgement of the recipient side as compared with the donor side.

Comment

Although the survival rate for both twins previously reported seems low, it must be noted that many of the babies were born in a more precarious state than we encountered. The plethoric twin is at as much, if not more, risk than the anemic one, because of his high hematocrit. For this reason, we elected to do the phlebotomy immediately. When we were unable to obtain what we considered an accurate measurement of blood pressure on the anemic twin, we realized that the difficulty probably was due to shock. This led us to prepare the donor bottle. Our indication, therefore, for phlebotomy in twin B was an hematocrit in excess of 80 percent. Our indication for transfusion in twin A was anemia and shock in a "small-for-dates" baby who had probably been malnourished for many weeks by not getting her fair share of the placental blood.

Twin B served as an eminently suitable donor for twin A; her blood consisted of virtual packed cells and was necessarily of the same blood type, since the placenta was monochorionic and the twins therefore monozygous.

* Citric Acid—0.73 gm/100 ml; Sodium Citrate—2.20 gm/100 ml; Dextrose—2.45 gm/100 ml.

TABLE 1

Measurement	Twin A	Twin B
	Small, pale, weak	Normal size, plethoric, vigorous
General Appearance		
Apgar Score (1 minute)	8	10
Weight (gm)	1675	2835
Length (cm)	45	49.5
Head Circumference (cm)	31	32.5
Initial Blood Studies		
Hemoglobin (gm/100 ml)	12.9	26.7
Hematocrit (%)	49	82
Blood Group & Rh	A pos.	A pos.
Phlebotomy (ml blood)	—	35
Transfusion (ml blood)	25	—
Post Therapy Blood Studies		
Hemoglobin (gm/100 ml)	18.4	21.6
Hematocrit (%)	56	65

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Addendum

Both twins have done well in follow-up. Their hemoglobin values stabilized around 12.0 gm/100 ml at 7 months, and their physical examination including growth and development was normal at one year.

Non-Prescription Medications from Health Food Stores - A Potential Source of Serious Illness

Louis C. Annino, R.Ph., Sheldon S. Sones, R.Ph., and Richard Quintiliani, M.D.

"One of the first duties of the physician is to educate the masses not to take medicine"—(Sir William Osler).

While the medical profession is often accused of indiscriminate use of drugs, a significant part of the problem is the direct fault of patients themselves or other non-physicians looked upon as authorities in the maintenance of health. Many laymen believe that if a small amount of any medication—especially vitamin preparations—is helpful, a great deal will

be more helpful. Local health food stores frequently encourage this idea since this philosophy undoubtedly yields significant profits. However, occasionally this concept has a disconcerting way of backfiring in the form of a toxic reaction to one or more of these medications. The following case shows the serious medical complications that can occur when non-prescription medications are taken in excess.

Case Report

This 31-year-old white woman was admitted to the Middlesex Memorial Hospital with the chief complaint of loss of hair throughout her body.

For several years prior to entry, the patient had been bothered by frequent episodes of depression requiring periodic visits to a psychiatrist. Despite psychiatric assistance, the patient continued to complain of tiredness and easy fatigability. On the advice of her mother and the owner of a local health food store, the patient began taking large quantities

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of “natural” vitamins and “health food supplements.” Moreover, the patient was referred by the owner of the health food store to a homeopathic physician in New Jersey who added more medications. At the time of her admission to the hospital, the list of medications that the patient was taking for at least six months is given in Table I. In order to permit these medications to work better, special instructions from the health food store included, “shaking the head side to side 25 times, forward and backward 20 times and diagonally 15 times.” A picture of some of the medications in her pocketbook on the day of admission are shown in Figure I.

On examination, the patient appeared alert and in no discomfort. There was obvious thinning of the hair in the axilla, scalp (see Figures 2 and 3), and pubic region. The remainder of the physical examination was entirely normal. All laboratory tests, including studies for thyroid, liver and bleeding

abnormalities were within normal limits. After four months of discontinuance of all medication except for tranquilizers, the patient noted complete return of her hair.

TABLE I
DAILY MEDICATIONS TAKEN BY PATIENT

# Tabs	Medication and Composition/Tab*
6	<i>Acidophilus & Pectin</i> —Lactobacillus Acidophilus Extract, Pectin (300 mg)
6	<i>Nuplex</i> —Vit. A (25,000 units), Vit. D (400 units), Vit. B ₁ (10 mg), Vit. B ₂ (10 mg), Vit. B ₆ (5 mg), Nicotinamide (100 mg), Vit. C (200 mg), B ₁₂ (5 mg), Vit. E (5 units), Calcium (125 mg), Iodine (15 mg), Iron (15 mg), Copper (1 mg), Magnesium (6 mg), Manganese (1 mg), Zinc (1.5 mg)
4	<i>Iron With Supplement</i> —Vit. B ₁₂ (25 mg), Iron (115 mg), Copper (0.5 mg), Manganese (2 mg), Vit. C (30 mg), Lemon Flavonoid (30 mg)
6	<i>Vitamin E</i> —100 units
6	<i>Manganese</i> —2 mg
6	<i>Vitamin C</i> —Vitamin C (500 mg)
6	<i>Vitamin A and D</i> —Vit. A (15,000 units), Vit. D (2,000 units)
6	<i>Calcium Pantothenate</i> —100 mg
9	<i>Enzymall</i> —Assorted Pancreatic Enzymes
3	<i>Formula 104 Multiple Minerals</i> —Ferrous Sulfate (65 mg), Calcium Phosphate (30 mg), Potassium Iodide (0.15 mg), Magnesium Oxide (12 mg), Sulfur (15 mg), Zinc Sulfate (10 mg), Copper Sulfate (5 mg), Potassium Chloride (5 mg), Manganese Sulfate (5 mg)
6	<i>Bone Meal</i> —Calcium Phosphate (750 mg—340 mg as elemental phosphorus)
6	<i>Dolomite</i> —Calcium (130 mg), Magnesium (78 mg)
6	<i>Glutamic Acid HCL</i> —Equivalent in Hydrochloric Acid content to 10 drops of Dilute HCL U.S.P.
6	<i>Vitamin B Complex Formula #49</i> —Vit. B ₁ (5 mg), Vit. B ₂ (5 mg), Vit. B ₆ (5 mg), Folic Acid (0.1 mg), Panthothenic Acid (20 mg), Para Amino Benzoic Acid (30 mg), Niacin (50 mg), Inositol (1,000 mg), Choline (1,000 mg), Vitamin B ₁₂ (15 mg), Ciotin (25 mg)
6	<i>Potassium Chloride</i> —75 mg
6	<i>Folic Acid</i> —10 mg
8	<i>Chlortrimeton</i> —4 mg
4	<i>Prolixin</i> —5 mg
3	<i>Thyroid Extract</i> —1/4 gr
6	<i>Unsaturated Fatty Acid</i>
6	<i>Safflower & Linseed Oil</i>
6	<i>Wheat Germ Oil</i>



Figure 1
Medications found in patient's pocketbook on day of admission.

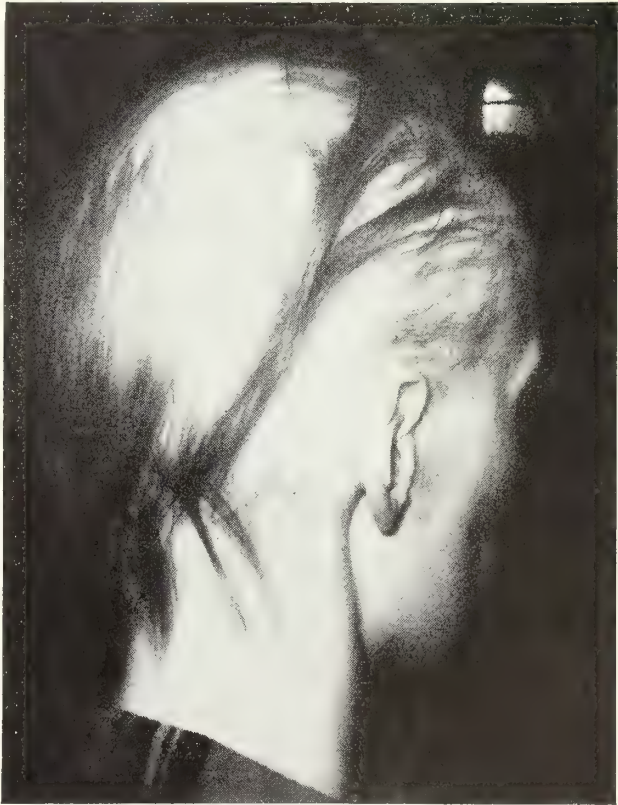


Figure 2
Front and lateral views of patient.



Figure 3
Showing alopecia.

Discussion

Overadministration with vitamin preparations by our essentially well-nourished society probably represents the most common form of overmedication in America today.¹ Although it is impossible to ascertain with certainty the cause for the patient's loss of hair in view of the multiple medications that she received, there is a strong suspicion that excessive Vitamin A was the culprit since this is a well-known toxic manifestation of hypervitaminosis A. The patient not only took 240,000 units of Vitamin A daily but also used this medication at her own discretion whenever she felt poorly which, undoubtedly, significantly increased the total daily dose.

Certainly people should be alerted that too much of a "good thing" may do harm and perhaps mandatory notices to this effect might be useful in health stores. The role they play in producing our "medicated society" however, is a relatively small one.

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Controversial Therapy of Dysgerminoma In Childhood

Rodolfo L. Lopez, M.D. and John A. Gariepy, M.D.

Introduction

Dysgerminoma discovered in a child or in a young woman of child bearing age, presents a problem in choosing the correct form of definitive therapy. These tumors may originate in either or both ovaries as well as in the uterus, broad ligaments, or fallopian tubes. Correct management of these patients must be planned by careful evaluation at the time of surgery. Total ablation of the female sex organs may produce a satisfactory cure rate, but leave a patient who is a physiological and emotional cripple. Seminoma is the male gonadal tumor for which dysgerminoma is the counterpart. Bilateral

orchiectomy is not the treatment of choice for seminoma.

History and Origin

Dysgerminoma was first proposed by Meyer¹⁰ in 1931 and has been commonly used since then. It was Chenot in 1911 who first called the attention of the medical world to this tumor which he termed seminoma of the ovary because he thought that this tumor was derived from the anlage of the seminiferous tubules.⁶ The origin of dysgerminoma is still vague but the most probable origin is the undifferentiated primordial germ cell. The original description of this tumor by Meyer in 1931 suggested the concept that there is a disorder consisting of the inability of the primitive germ cell to differentiate into either male or female types. Therefore, it could

DR. RODOLFO L. LOPEZ, chief surgical resident, and DR. JOHN A. GARIEPY, associate attending surgeon, Bridgeport Hospital, Bridgeport, Conn.

develop into the same pathologic structures in either sex glands.¹⁰ On the other hand, Pedowitz et al. believe that dysgerminoma has its origin from totipotent cells of the primitive mesenchyme capable of differentiating into any direction, and therefore capable of differentiating into choriomatous and teratomatous tissues.¹⁴

Incidence

The incidence of dysgerminoma is three to five percent of all malignant ovarian tumors.¹¹ Ninety percent of these cases occur in young women and adolescents.¹⁵ In Mueller's series, seventy-two percent were found in the second and third decades of life.¹² The youngest patient reported with dysgerminoma of the ovary was a two year old child.⁷ Dysgerminoma may occur in either or both ovaries.

Pathology

The size varies and its shape may be bilobate or spherical. Its external surface is a smooth dense fibrous capsule. At times knobby excrescences may be present. It has a firm, rubbery consistency and rarely may be cystic. On section, the tumor has a gray to pinkish appearance, interspersed with yellowish necrotic and hemorrhagic tissues. If necrosis and hemorrhage has occurred, the tumor is softer in consistency.

The microscopic diagnosis is usually not difficult because of the distinctive and characteristic appearance. The histologic pattern varies but usually the cells are arranged in alveoli separated with fibrous hyalinized septums infiltrated with lymphocytes. The individual cells are large polygonal or rounded cells with either clear granular or basophilic cytoplasm. The nuclei are rounded or ovoid, centrally located with one or two prominent nucleoli. Some areas of degeneration and necrosis are usually present.

Metastases occur through direct continuity when the tumor breaks through its capsule, or via the lymphatics when it presents itself as supraclavicular⁴ or groin adenopathy. There have been reports of cases where dysgerminoma were found in organs outside the abdominal cavity such as the heart, lungs and the thyroid gland which most probably had metastasized through the systemic circulation.¹²

Early reports of dysgerminoma described the high incidence of associated pseudohermaphroditism, menstrual abnormalities and sexual maldevelopment.¹⁰ But as more and more of these cases were reported, it was found that dysgerminoma was not related to the development of sex abnormalities. Therefore, extirpation of the tumor does not change

the existing congenital abnormalities.¹³ There was a reported series of dysgerminoma where all patients had no associated developmental and sexual abnormalities except for one who had marked mental retardation.¹⁴

Clinical Picture

There is no characteristic clinical picture of this tumor. There are, however, features that could make one suspicious of the pre-operative diagnosis of dysgerminoma. The majority of the tumors occur in the second and third decades of life. Mueller et al. reported in his series that the tumors were found at the right ovary in 50.1 percent in contrast to 35.1 percent at the left side and 14.8 percent were bilateral.¹² Therefore, one certainly should suspect this diagnosis when a young female presents herself with a large solid ovarian tumor at the right side. More than half of the cases reported in the literature present with an abdominal mass. Most of them have an insidious onset with vague abdominal pain, loss of weight and increase of abdominal girth. Occasionally, however, the presenting signs and symptoms are more dramatic. Sudden, severe unilateral, continuous pain at the lower abdomen and with radiation to the thigh associated with fever may imitate acute appendicitis. This acute clinical picture should lead one to suspect torsion of an ovarian tumor. Pedowitz et al. described torsion in fifteen of one hundred two cases of dysgerminoma¹⁴ while Muller et al. noted five percent torsion in their series.¹² Pleural effusion could be the presenting sign several months prior to the discovery of dysgerminoma or may be concomitant to the diagnosis of the tumor.⁴ Other unusual presenting signs are incarcerated bilateral inguinal hernia³ and supraclavicular or groin adenopathy.

No laboratory test is specifically diagnostic for dysgerminoma but there are reports of positive Aschheim-Zondek tests in spite of proven absence of pregnancy or choriocarcinoma.⁵ This test becomes negative after surgical removal of the tumor.

Report of a Case

A nine year old white female was seen by her family physician because of an enlarging abdomen associated with anorexia and intermittent episodes of vomiting for three to four weeks. On examination there was a huge oval mass occupying the abdominal cavity from the xiphoid to the symphysis. There was no evidence of feminizing nor masculinizing changes suggestive of hormonal tumor involving the ovary. Laboratory and x-ray studies were negative. An exploration was carried out and a well encapsulated mass about 20x15x5 cm. was found to involve the right ovary. The clinical impression at the operating room was dysgerminoma. The left ovary and the uterus were normal. Careful palpation at the

aortic, retroperitoneal area and the parametrium revealed no evidence of metastasis. A right salpingo-oophorectomy was then carried out. Histopathological report confirmed the clinical impression of dysgerminoma. Post-operatively, the patient did well and was closely followed for more than five years. So far there has been no evidence of recurrence.

Treatment

The proper management of dysgerminoma is difficult to assess in one institution because of the rarity of this disease. There is a consensus of opinion that in older parous women or in young patients with obvious involvement beyond the confines of one ovary, bilateral salpingo-oophorectomy, total abdominal hysterectomy followed by irradiation is the optimum treatment.^{14,15,16} There is, however, a continuous controversy regarding the mode of therapy in a child or in a young nulliparous woman who desires offspring and who, at the time of exploration, reveals a well encapsulated unilateral dysgerminoma with no metastasis to adjacent or to distant organs. In these cases there is the natural tendency to preserve the child bearing function regardless of the higher recurrence rate in patients treated conservatively (unilateral adnexectomy). In a child there is the additional consideration of the effect of castration to the growth and development. In the case reported above, conservative management was elected for the purpose of preserving the reproductive function and with the intention of close follow-up throughout life. So far no recurrence has been noted after more than five years. Over half of the recurrences appear within a year after operation.¹⁵

Pedowitz et al.,¹⁴ and Thoeny et al.,¹⁶ strongly recommend radical surgery followed by irradiation in all patients regardless of age, size of tumor and degree of encapsulation. Malkasian and Symmonds⁹ proposed individualization in spite of their fifty-two percent recurrence and a six percent decrease of survival rate. In their series, the five year survival rate of the group treated conservatively was 80.9 percent as compared to the five year survival rate of 87.5 percent with the group with more extensive therapy. Permanent remission rate of 63.6 percent of the recurrent lesions was obtained after further treatment. Moreover, 37.7 percent had subsequent pregnancies. Recent reports by Asadourian and Taylor¹ showed that the ten year post-operative survival rate of the group treated conservatively was eighty-eight percent in contrast to eighty-three percent for patients treated radically. However, the recurrence rate in the group treated conservatively was twenty-two percent while the group treated with more extensive therapy had a recurrence rate

of only twelve percent. This, however, did not affect the survival rate to a significant degree because sixty percent of the recurrent lesions in the group treated conservatively were controlled and presumed cured after additional treatment. Furthermore, conception rate after unilateral salpingo-oophorectomy for this tumor ranges from 27%¹ to 37.7% and several patients had more than one pregnancy. There are pre-requisites, however, that one must follow before one can plan conservative treatment. Bilateral involvement of the ovaries with dysgerminoma is 11%¹ to 14.8%¹² so that wedge biopsy of the uninvolved ovary and microscopic examination by frozen section must be negative. Likewise, the parametrium, the para-aortic and retro-peritoneal area should be carefully palpated for any metastasis.¹

Summary and Conclusion

A unilateral encapsulated dysgerminoma of the ovary in a nine year old white female was reported. She was treated conservatively and was doing well during her close follow-up for more than five years. Review of the literature revealed that many surgeons routinely treat dysgerminoma of the ovary with radical extirpation followed by x-ray therapy regardless of age, encapsulation or extent of the disease. There are those who agree with the radical approach but who individualize their treatment and in certain cases perform unilateral oophorectomy. Conservative treatment is justified in children or in nulliparous young women, provided that the tumor is well encapsulated, that there is no involvement beyond one ovary and that the microscopic examination by frozen section of a wedge biopsy of the opposite ovary is negative.

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Spontaneous Rupture of The Liver in Pregnancy

Donald J. McCrann, M.D. and Lieutenant Commander Raymond A. Gagnon, M.C.

Introduction

Subcapsular hematoma of Glisson's capsule with secondary tear and bleeding is a rare complication in pregnancy. Abercrombie,¹ in 1844, was the first to report such a case and since then 35 cases have been accumulated in the literature. A multiparous patient with toxemia and no history of trauma is the case presented in this paper. A right hepatic lobectomy was done to control the bleeding which was the first in the literature as treatment for this complication.

A 46 year old, Gr. 10, Para 8,0,1,8 was admitted on December 12, 1969 because of toxemia. Her expected date of confinement was 12/15/69. The patient's past history was uneventful obstetrically with the exception of her last delivery at which time her infant had been erythroblastotic and required one exchange transfusion. The patient had mild hypertension between pregnancies not requiring medications. During her present pregnancy, she had three amniocentesis which revealed a decreasing curve with the interpretation of a non-sensitized infant and probably an Rh negative baby. Her blood pressure in the last few weeks rose steadily to 208/110 when she was admitted.

Examination revealed a well developed, well nourished, white female in no acute distress and who had no major complaints. Weight 163, blood pressure 208/110, pulse 80, respirations 14. She had

no edema and the uterus was 38 weeks in size. Initial laboratory data revealed a BUN 17, Blood Sugar 83, urine 2+, protein and Hct. 41. She was treated with bedrest, phenobarbitol and diuril.

On the third day of admission, her B.P. was 180/114. F.H. 140, cervix 2 cm. dilated, 30% effaced and she was scheduled for induction. On the morning of the induction, she had her routine prep and enema, then a liter of 5% D/W with 5 units of syntocinon was started intravenously. At 9:30 a.m., after only 4 mild uterine contractions, the F. H. was suddenly lost. B.P. at this point was 200/100. The syntocinon infusion was changed then restarted again 2 hours later. At 3:00 p.m., she had irregular uterine contractions, the longest of which was 25 seconds. She now suddenly complained of severe right upper quadrant pain and weakness. Her B.P. was falling and pulse rising. Abruptio placenta was suspected and she was taken to the Cesarean section room. On entering the abdomen, it was noted that there was 500 cc's of free blood in the peritoneal cavity, the origin of which was not determined at this point. A low transverse incision was then made in the uterus with the delivery of a 6 lb. 13 oz. stillborn male. The placenta had a small infarct and no bleeding could be seen. The uterus was closed in 2 layers and the abdomen explored. A 12 cm. long by 10 cm. wide tear was found through Glisson's capsule on the antero-lateral side of the right lobe of the liver, through which brownish-red material was extruding as well as fresh bleeding. Further exploration revealed a

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small rent in the post capsule of the right lobe. The entire right lobe looked very congested and mottled. On palpation, it was extremely friable and mushy. Attempted suturing was fruitless and because of the above, it was decided that a right hepatic lobectomy be done. Prior to, during and immediately following the procedure the patient received 32 units of blood. At the completion of the lobectomy, she had been without a B.P. and palpable pulse of 1½ hrs. Six hours post-operatively, she was pronounced dead in the Intensive Care Unit.

Post mortem examination revealed a 2000 gm. liver in separate portions with many clots along the surgical area. Microscopic examination showed focal hepatocellular degeneration and hemorrhage. There was also evidence of nephrosclerosis and arteriosclerosis of the spleen, undoubtedly related to the hypertensive episode of this patient.

Discussion

Spontaneous rupture of the liver in pregnancy is indeed a rare complication but when seen is catastrophic. Abercrombie¹ wrote in 1844 that a young maid tied a kerchief around the abdomen of her matron for severe epigastric pain which later revealed a ruptured liver. Since then 35 cases¹⁰ have been reported of which the mortality rate has exceeded 75%. Rupture of the liver has been reported by Yen¹² where a hematoma was found in one patient and an amebic abscess in another. When the diagnosis is finally made with the signs and symptoms of pre-eclampsia or eclampsia, right upper quadrant pain, sudden hypotension and an acute abdomen, the treatment has varied. Most cases reviewed show not an actual laceration of the liver, but a rent in Glisson's capsule with hemorrhage and necrosis in the hepatic cells. The treatment has been toward the repair of this torn capsule. Suturing of the capsule and packing with sponge coagulants, abdominal packs and even cauterization have been tried, all of which have been disappointing. Touloukian¹⁰ has suggested the most plausible sequence of events was that rupture of a portal venule leads to intrahepatic hemorrhage. This causes local necrosis of liver tissue and formation of a subcapsular hematoma. Under sufficient tension, the capsule tears and blood escapes into the peritoneal cavity. The combination of hypertension, convulsions or vomiting which was known to have occurred in several of the cases, is apparently adequate to raise the intra-abdominal pressure to the point of rupture of Glisson's capsule by a massive hematoma which has resulted from the liver lesions. In the case pre-

sented, perhaps the increased intra-abdominal pressure of the forces used to expel the enema was enough to cause a rupture in the capsule. There was a six hour interval however between the expulsion of the enema and onset of symptoms.

A right lobectomy was done in this case because of the extent of the rupture through the capsule. This, too, proved fatal to the patient. What the corrective treatment is, has not yet been established. The control of active bleeding from an engorged, friable and torn liver is extremely difficult and most frustrating. Cryosurgery has yet to be tried and perhaps this may be helpful in the future. At present the best treatment is prevention since once recognized the mortality is high.

Summary

A toxemic patient is presented with a spontaneous hematoma and tear through Glisson's capsule. The treatment in this patient was a right lobectomy because of the extension of the tear and the inability to control the bleeding with suturing. The overall mortality of 75% with this complication suggests that perhaps still other methods should be investigated, perhaps even cryosurgery for treatment.

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Connecticut Medicine

Editorials

Cost and Human Life

During the past few decades tremendous changes have occurred in medical technology. An obvious manifestation of advances in medical and surgical technique is increasing number of specialists. This trend to specialization is not, of course, unique to medicine. It is an inevitable consequence of technological advances in any field. In the last 20 years the number of medical specialists have tripled. Specialists now constitute about half of all physicians. To be sure, many specialists also act as personal physicians. However, the trend to specialization has been accompanied by increased consultations and referrals between members of the profession. This, of course, has increased the cost to the patient or his insuring agency.

One of the most striking changes which have occurred in the practice of medicine in the last 25 years is the enormous proliferation of investigations which can be carried out in an attempt to confirm or reject a clinical diagnosis. At the same time these tests have been made much more readily available to practicing physicians. Examples are measurements of electrolytes, gases, fats, enzymes, hormones, measurements of factors involved in blood clotting, serological techniques used in blood grouping and in the diagnosis of several diseases. Then there are the tests depending on the use of radioactive isotopes such as blood volume estimation, scanning of thyroid, heart, brain, liver, pancreas, and other organs. Then there are the needle biopsy, angiography, EEG, ECG endoscopy, gastroscopy,

phonocardiography, use of ultrasound to locate organs and tumors in the body and many more.

With the development of these new techniques of investigation has come a changed approach in diagnosis on the part of both doctor and patient. Neither is now ready to accept a diagnosis based solely on the basis of the history and physical examination. The physician does this partly because it is more "scientific", but also partly because of lack of confidence in his clinical findings he wishes to confirm his suspicions with black and white X-ray shadows which he can see, tissue which he can examine under the microscope or numbers reported from the laboratory.

In an attempt at making a diagnosis at an earlier stage of the disease or to rule out all the conditions he can think of which might conceivably cause the patients symptoms and signs he orders more and more tests and repeats them more and more frequently. During his education the future physician is much more influenced by investigators dealing with difficult clinical problems and fails to realize that such intensive investigation is not necessary in most patients seen in private practice. The question "how will the result of this investigation assist in the management of the patient", is not asked often enough.

In parts of this country the fear of legal action also causes the physician to order more investigations than are perhaps necessary. Furthermore, if the doctor is too busy, it is only too easy to try to save time by substituting in-

THE COVER

MORGAGNI AND PATHOLOGIC ANATOMY

IN THE famous anatomic amphitheatre built in 1590, Giovanni Battista Morgagni (1682-1771) demonstrated before medical students from many countries during the 56 years he served as Professor of Anatomy at the University of Padua, Italy. Although his first book was published in 1704, Morgagni's greatest contribution to medicine, *On the Seats and Causes of Disease*, came out 57 years later, in 1761. This five-book work, embodying a lifetime's experience in dissection and in observation, convinced medical men that diseases were not dispersed generally throughout the body, but got their start locally in specific organs or tissues.

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Contraindications: As for all other corticoids. *Considered Absolute*—herpes simplex keratitis, acute psychoses and latent, healed or active tuberculosis. May be lifesaving in certain cases of pulmonary or meningeal tuberculosis, but should be used only in conjunction with adequate and effective antituberculous therapy to which causative organisms are shown to be sensitive. *Considered Relative*—active or latent peptic ulcer, Cushing's syndrome, diverticulitis, fresh intestinal anastomoses, osteoporosis, renal insufficiency, thromboembolic tendencies, psychotic tendencies, diabetes mellitus, hypertension, local or systemic infections including vaccination, varicella and other exanthematous diseases, and fungal infections, and, pregnancy particularly during the first trimester because of observation of fetal anomalies in experimental animals. If necessary to give corticosteroids during pregnancy, watch newborn infants closely for signs of hypoadrenalism and institute appropriate therapy if signs appear.

If corticoids are used in the above conditions, weigh risks against benefits.

Precautions: Deltasone should be given only with full knowledge of characteristic activity of and varied responses to corticoids. Because of inhibiting effect on fibroplasia, corticoids may mask signs of and enhance spread of infection; hence, watch patients closely, and if intercurrent infection occurs, control with appropriate antibacterial measures. If possible, avoid abrupt cessation of corticosteroid therapy because of the danger of superimposing adrenocortical insufficiency on the infectious process. Prolonged hormone therapy usually causes a reduction in the activity and size of the adrenal cortex. When discontinuing therapy, relative adrenocortical insufficiency may be avoided by gradual reduction of dose. However, a potentially critical degree of insufficiency may persist asymptotically for some time even after gradual discontinuation of adrenocortical steroids. Therefore, if a patient is subjected to significant stress, such as surgery, trauma, or severe illness while being treated, or within one year (occasionally up to two years) after treatment has been terminated, hormone therapy should be augmented or reinstituted and continued for the duration of the stress and immediately following it. Since mineralocorticoid secretion may be impaired, salt and/or desoxycorticosterone should be administered conjunctively. It is preferable to use a soluble hormone preparation in the immediate preoperative and postoperative periods.

Although unlikely with Deltasone, average and large doses of corticosteroids can cause elevation of blood pressure, salt and water retention and increased potassium and calcium excretion. Dietary salt restriction and potassium supplementation may be necessary. Glucocorticoid steroids may aggravate diabetes mellitus so that higher insulin dosage may become necessary or manifestations of latent diabetes mellitus may be precipitated. Corticosteroids may aggravate myasthenic symptoms in myasthenia gravis and should be given with proper precautions.

Muscle weakness, in some instances, attributed to hypopotassemia, has been reported following prolonged systemically administered corticoids. Excessive potassium loss, like excessive sodium retention, is not likely to be induced with effective maintenance

doses of Deltasone (prednisone), however, keep this effect in mind and perform periodic serum potassium determinations in patients on prolonged corticoid therapy. Muscle weakness occurring with normal serum potassium levels may be due to disturbance in muscle metabolism. Severe myopathy is associated with substantial doses of steroids for prolonged periods, and evidence indicates it occurs more frequently with 9- α -fluoro steroids. Replacement with non-fluorinated steroid has, in some instances, resulted in improvement.

Retardation of linear growth, roughly proportional to dose, has been noted in children on corticoids for six months or more. Following cessation of therapy, growth rate may be accelerated. Therefore, carefully observe growth of children on prolonged corticoid and if growth is retarded, reduce dose sufficiently to permit recovery before epiphyseal closure. Make every effort to avoid corticoids during pregnancy, since spontaneous remission of some diseases such as rheumatoid arthritis may occur. Long term corticoid therapy may evoke hyperacidity or peptic ulcer, therefore, as prophylaxis, an ulcer regimen and antacid are highly recommended. Take X-rays in peptic ulcer patients complaining of gastric distress, and, whether or not changes are noted, an ulcer regimen is recommended. Since prednisone causes less salt and water retention than many other glucocorticoids, patients should be observed closely for development of undesirable hormonal effects that are less obvious indications of steroid toxicity than edema and hypertension due to salt and water retention. Continued supervision of patients after cessation of therapy is essential, since there may be a sudden reappearance of severe disease manifestation.

Adverse Reactions: Adverse reactions associated with use of corticoids include: Cushing's syndrome, moon facies, supraclavicular fat pads, hirsutism, striae and acne; relative adrenocortical insufficiency particularly in time of stress due to trauma, surgery or severe illness; protein catabolism with negative nitrogen balance; electrolyte imbalance; alteration of glucose metabolism with aggravation of diabetes mellitus including hyperglycemia and glycosuria; osteoporosis reversible only with difficulty; spontaneous fractures; aseptic necrosis of the hip and humerus; activation and complication of peptic ulcer including perforation and hemorrhage; aggravation or masking of infection; increased blood pressure; convulsions; petechiae and purpura; menstrual irregularities including amenorrhea, spotting or prolonged bleeding; insomnia; psychic disturbances especially abnormal euphoria; nervousness; posterior subcapsular cataracts occasionally requiring extraction; increased intraocular tension; increased intracranial pressure with papilledema (pseudotumor cerebri); pancreatitis; necrotizing angitis; thinning of scalp hair; suppression of growth in children; thromboembolic complications; facial erythema; allergic skin reactions; ulcerative esophagitis; sweating; vertigo; weakness; myopathy; headache; exophthalmos. Adverse reactions are usually reversible and usually disappear when drug is discontinued.

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vestigations for clinical skills. The patient on his part is aware of the existence of investigations which may be applicable to his condition especially if things do not go too well, often requests them outright and ever more frequently one suspects goes away disgruntled and unconvinced in search of another doctor if the first one has not ordered them. Whatever the reasons, there has undoubtedly been a substantial increase in the use of investigations both in the private office and the hospital.

The increase in utilization of tests has been substantially greater in hospitals than office practice and medical economists are beginning to study the "price of progress." Gellman estimates \$1,200,000 has been spent on cervical cytology in Manitoba. The number of cases of cancer *in situ* detected has more than doubled but no significant reduction has occurred in invasive cancer.

Renovascular hypertension investigation cost \$50,000 for each cured patient and \$20,000 for each patient of seven patients who received some benefit. The intensive care in the Winnipeg General Hospital cost \$1,215,000. Gellman points out the great cost and relatively small benefit which would occur if the technology of intensive care were to be made available to all patients indiscriminately.

The running cost of the dialysis unit at the above hospital is about \$400,000 exclusive of physicians fees. The major task of the unit is the maintenance of 25-30 patients with chronic renal failure awaiting transplantation. This means \$10,000 per patient per year if treatment is given in the hospital and \$5,000 per year if treatment is carried out at home. Virtually no patient could afford to pay for long term dialysis even if restored to full time working capacity and a great many are not.

The idea that disease might be detected before it produces symptoms and that if so their treatment might be more effective is an appealing one. This has led to the concept of automated multiphasic screening. At the Kaiser-Permanente Clinic the cost per person is \$21.33 not including the physician and examination sigmoidoscopy and pelvic examinations. Gellman has suggested that the real role of multiphasic screening will be to separate those patients who require the services of a physician from those whose needs can be met by other professionals. Then the screening results will be integrated into the ambulant care and hospital facilities of

the community. Obviously screening without proper follow up is useless.

Nobody at present knows how often people should routinely receive a health examination. Many advise it annually. Most followup studies of patients who have had periodic health examinations have failed to show any statistically significant benefit. Kaiser's program has failed to produce any significant reduction in mortality or hospitalizations at any rate in the short terms. Probably the most thorough study of the subject involving over 20,000 men for more than 138,000 man years concluded that the data are compatible with a favorable influence of periodic health examinations on mortality experience but do not allow conclusions to such an effect. It is not yet known to what extent, if any, presymptomatic treatment of many of the conditions uncovered improves prognosis.

While it is interesting to put a price on health for each individual, no one wishes to put a price on a human life. We clinicians by training and instinct are too deeply involved, and rightly so, with the individual patient to allow cost to play a role in reducing chances of saving a human life. There is a Talmudic saying that "he who has saved a life has saved a world." It would be better for cost accountants to worry about how much money is wasted in government operations, on war, and other wasteful activities and leave medical service to save as many lives as possible. We physicians know and so should the accounts that the ratio of cost to benefit is a moral not an economic issue.—L.H.N.

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Medical Dogma: Polyunsaturated Oils To Prevent Heart Attacks

Polyunsaturated fats and oils are promoted as a definitive means to lower serum cholesterol levels and thus prevent heart disease as well as a treatment for existing heart disease. It is true that a slightly increased amount of polyunsaturated fats transiently lowers laboratory measured serum cholesterol. It is also true, however, that there is no clinical evidence that such transient lowering of serum cholesterol by this

means in any way prevents or modifies heart attacks or coronary heart disease. Besides, such diet studies do not consider all the extraneous but related factors such as exercise, stress, age and genetic susceptibility, to name but a few. But what is also neglected is the action of the polyunsaturated oils on the body after they undergo the alterations of cooking.^{1,2}

It is common to cook with unsaturated oils and margarines in the belief that the use of such oils and margarines are directly helping one's heart. However, there is ample evidence that the heating of polyunsaturates tend to resaturate the product and thus cooking with polyunsaturates would defeat the very purpose for which their use is commercially promoted. This has been brought to light many times.^{3,4} There are many references⁵ to the fact that heated unsaturated fat shows a decreased iodine number (evidence of increased saturation) along with a loss and degradation of linoleic acid. Resaturation of polyunsaturates by heating happens at times and temperatures that are typical for family cooking.

The degree of saturation becomes even worse if the fat or oil is reused as is the custom among housewives and in restaurants. Even more saturated are the fats and oils used in restaurants and other commercial eating establishments where the cooking media are kept at high temperatures for months at a time or are reheated daily. The degree of saturation has been known to reach an iodine number lower (more saturated) than that of pure butter which is only 63 percent saturated fat.³ As a comparable measurement some margarines are advertised as "high" in polyunsaturates actually contain 50 percent saturated fats¹ Gattereau⁸ claims that conven-

tional margarine being substantially more saturated than the original oil offers little advantage over butter. To be even more specific concerning the matter of heated polyunsaturates Kritchevsky¹³ has shown that heating an unsaturated oil especially corn oil to 200°F for 15 minutes for less than normal cooking time critically enhances atherosclerosis in animals.

Another matter of considerable importance is the relation of heated polyunsaturates to cancer. Kummerow⁷ in his studies showed that animals fed on a diet of heated corn oil developed tumors and only one out of 96 survived the 40 month experimental period. None of the animals fed only fresh unheated corn oil developed tumors and all survived. As if to pointedly confirm the "inference" between animals and humans Pearce and Dayton⁸ reported to the American Heart Association that men on an experimentally high polyunsaturated fat diet had a 65% greater incidence of cancer compared to a control group given a standard diet. Those on the experimentally high polyunsaturated diet also had 70 fatal atherosclerotic events as compared to 48 such deaths in a control group. A similar ratio was observed for myocardial infarction and cerebral infarction. Dr. Pearce and Dayton said that their unexpected findings bring into question proposals to change the American diet by substituting vegetable oils for animal fats for the entire population.

One more report on other toxic effects of a massive adherence to polyunsaturates comes from the work of Tappel who studied the formation of peroxides that occur with an increased intake of polyunsaturated fats. He links these toxic substances to aging and indicates that polyunsaturates "may well be a primary source

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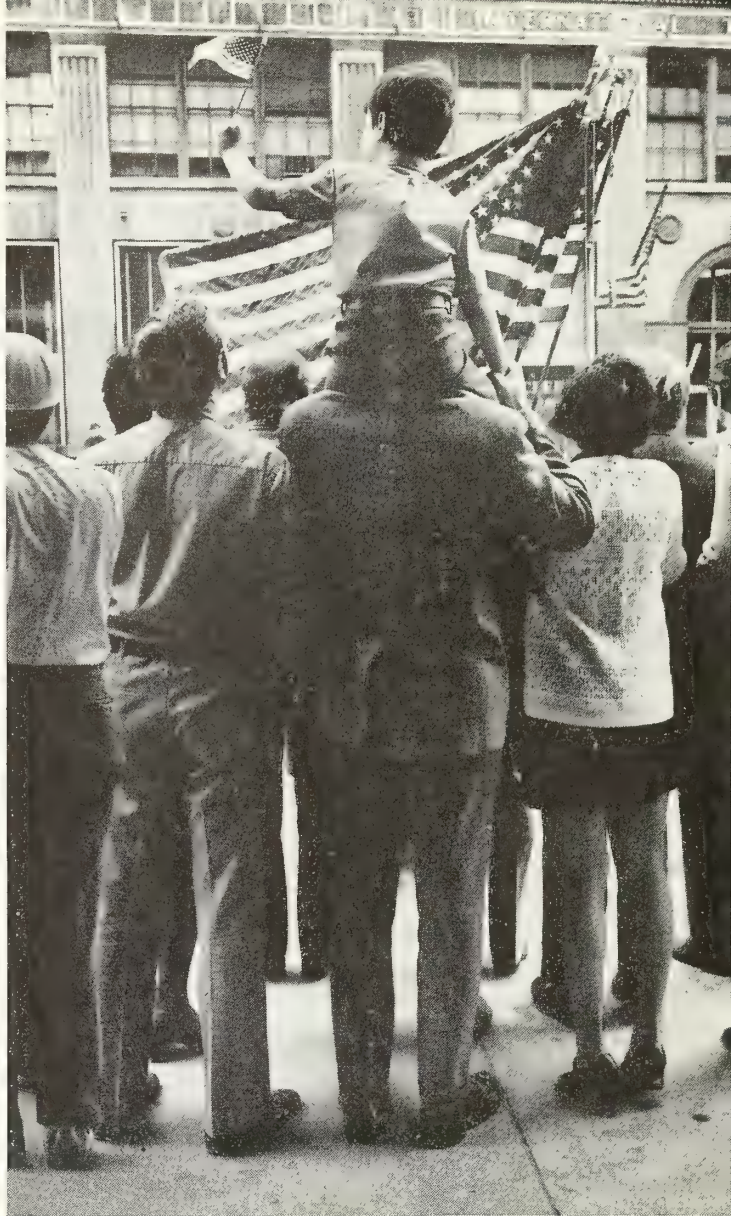
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*U.S. PATENT NO. 2,695,877

of aging within the cell to cause it to age. Thus we can see that they may well be sufficient detrimental side effects if we push the use of polyunsaturates too far. In view of this, it is particularly surprising that the National Heart and Lung Institute has just published a set of guidelines for physicians which recommends that certain individuals with an elevated serum cholesterol should use polyunsaturates for broiling, baking, or frying, as well as in popping corn.

Unfortunately, attention to one form of diet tends to neutralize the impact of many newer discoveries concerning lipids in the blood. One is the effect of carbon monoxide in relation to atherosclerosis. Another is the effect of ozone on unsaturated fatty acids. A third is the hardness of water in relation to heart disease. A fourth is the genetic fact of a relation between serum cholesterol levels and the AB type of blood.¹² A fifth is the effect of sucrose in the etiology of atherosclerosis and coronary heart disease. A sixth is the importance of psychosocial factors in coronary heart disease. To date the most significant relationship between heart disease and job stress and risk factors have received only minimal attention.⁴

The fact that low cholesterol diets play such a minor role in the cholesterol problem and that polyunsaturates are of no avail and may do harm, does not justify our turning away from this risk factor. It merely means that we may need other means, besides diet, to hold the cholesterol serum level down, such as clofibrate dextrothyroxin estrogen and perhaps phenformin.—L.H.N.

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Society And Medicine: The Need For Tuberculosis Control

Over the last 50 years deaths from tuberculosis have declined sharply. Fifty years ago it was the number one killer. Now it is number 20. The highest incidence of new active cases was 137,000 in 1948 at a rate of 94 per 100,000. In 1970 new cases reported were 37,000 an all time low. There were 11,000 deaths in 1960. In 1969 it had dropped to 5,000. The number of hospital beds assigned for tuberculosis were reduced from 41,000 to 15,000. The increase in ambulatory service have saved the government and states 500 million dollars a year.

Nevertheless, the disease persists, especially in certain poor areas and officials of the federal tuberculosis branch of the government has set themselves three goals. One is to identify the infected. Another is to find an agent "to wake and whack" dormant tuberculosis bacilli. A third is to pinpoint those people who are most vulnerable to the infection. There is to be sure a continuing decline in active new cases, relapses, total known active cases, deaths, and the rate per 100,000 people. If communities can give the problem a high enough priority then they can with federal consultation personnel and resources identify and assist the tuberculosis infected in their areas.

Tuberculosis, unlike most infections may remain dormant for years and then for reasons not entirely clear break out into active disease. Eight out of 10 "new active" cases actually represent breakdown to overt disease from tuberculosis infection acquired years before. A big help in identifying the infected would be a

one shot tuberculosis test. At present the TB test requires a second visit by the person being tested and also requires careful administration and interpretation. Another thing necessary is to tailor the TB care system to the needs of the individual. To achieve this, the care facilities should be set up close to where the patient lives and operate outpatient care at hours when it is convenient for people to come in. The care facilities must be expedited and staff care facilities with people who like people.

A second goal is an agent of some sort to awaken dormant bacilli and destroy them in their vulnerable multiplying stage. Preventive treatment of course would be the answer. Since TB is a curable disease, search for a vaccine against this continues. The BCG is an attenuated live product which offers protection only if the individual never has been infected with the bacillus. Besides offering no protection to those already infected BCG vaccine causes the vaccinated person to react positively to TB testing. Even if such a vaccine were available today there would still remain the problem of getting it to all who would need it.

Work on the third objective—pinpointing those in the population who are most at risk for TB involve epidemiology for which there is no budget. Well known is the fact that one has to be in prolonged contact with a person who has active infection and that droplets from sneeze, cough and laugh, contaminated with the bacilli must be achieved. What triggers the breakdown to active infection may be not the bacillus, at least not alone. Stress has been suggested as a possible trigger. In any case, it is known that TB is much more prevalent in men than in women and that about only one in 10 people who become infected experience the breakdown into active disease. Pinpointing this vulnerable 10 percent and learning why they are at greater risk is now the goal.

Three years ago the Public Health Service noted that on the average, young physicians coming into commissioned service missed 14 of 21 questions posed to them about tuberculosis. Accordingly, these officials naturally would like to see more emphasis on the disease in medical and nursing school. This should not be too difficult to accomplish since sanatoria are generally not far from university complexes.

Isoniazid (along with streptomycin, para-aminosalicylic acid, and ethambutol) has been the first line drug in treating tuberculosis for almost 2 decades. One difficulty with it has been that 1-10 cases per 1,000 per year develops hepatitis. No one has ruled out impurities in manufacturing of the drug. In spite of this occurrence the program of preventive treatment with isoniazid and guidelines for selecting recipients should not be modified at this time. There must, however, be excluded the patient who has already had an adequate course of the drug. Also, excluded should be the patient with a history of adverse reaction to isoniazid and to consider individually those who have had other long term medication or a history of current liver disease. Patients receiving isoniazid should be interviewed monthly and evaluated for symptoms and signs of hepatic damage.

The suggested declining order of priority for administering the drug are first household contacts and persons whose tuberculin test has converted or substantially increased in size in the past two years. Next in order are those persons with inactive tuberculosis who have not had adequate chemotherapy. Next are those people with abnormal X-rays who have not had previous chemotherapy and in whom the skin test is interpreted as positive. Treatment should also be accorded to patients with other medical conditions occurring in a reactor like diabetes, reticuloendothelial disease and post-gastrectomy status. Finally are the tuberculin reactors under age 20.

We must all be aware of isoniazid associated liver disease and therefore there should be extensive surveillance of all liver disease. There should be undertaken study of the manufacturing and distribution of isoniazid. Efforts are needed to determine the incidence of isoniazid associated hepatitis. Finally, it is urgent that there be studies of the effects of the drug and its metabolites.

Tuberculosis can be eradicated. It is curable. We need to find the cases and treat them. This can only be done with sufficient funds. This in turn depends on the priority we give to its eradication.—L.H.N.

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Another Hazard of Practicing Good Medicine. The Contrast Dyes

In approximately 50 case reports the cholecystographic agents appear to be responsible for acute renal failure. The pathogenesis of this type of failure has received little study. It has also long been recognized that uricosuric agents may be nephrotoxic. In this case it has generally been attributed to the excessive excretion of uric acid and to its precipitation from the urine at either an intrarenal or an extrarenal site. It is possible that oral cholecystographic agents are uricosuric and perhaps occasionally cause renal failure by means of this mechanism. Accordingly, Mudge undertook to determine whether the cholecystographic agents are uricosuric.

He studied 9 patients and found that average rates of uric acid to creatinine increased by 68 percent in the first 24 hour period after receiving a cholecystographic dye. This represented an absolute increase in uric acid excretion. The uric acid excreted was proportional to the dose, occurred during the night hours and returned to normal in the morning. The results from four subjects of intravenous administration showed an unequivocal uricosuric action with absolute increase in urate output. A host of organic acids are uricosuric including many well known drugs whose primary use is for other purposes such as probenecid and sulphinpyrazone. To these Mudge points out can now be added the cholecystographic agents which are more potent than probenecid.

It is generally accepted that the use of uricosuric drugs should be accompanied by a liberal intake of fluid and of alkalizing agents. Both measures increase the solubility of urates by maintaining a low concentration of uric acid in the urine. With severe hyperuricosuria acute obstructive nephropathy occurs with clogging of either the tubules or the ureters with crystals. The extent to which uric acid may be nephrotoxic by mechanisms other than those of precipitation or of calculus formation is, however, uncertain. It is of note that uric acid becomes concentrated within the medulla presumably by a counter current mechanism leading to medullary concentrations substantially higher than those of the voided urine.²

According to routine practice, gallbladder agents are usually given in a simple dose in the early evening. The direction for 2 currently used agents call for no fluid intake "except small

amounts of water" for one, and nothing by mouth except ordinary small amounts of water for the other. Patients are instructed to avoid further food intake until the radiologic examination on the following morning. It is also probable that most patients voluntarily restrict water as well and in addition many patients have upper gastrointestinal symptoms for which the test is being made. Furthermore, nausea and diarrhea are common side reactions to the agents themselves. All these operate to further reduce fluid intake.

Since the uricosuric action is prompt and reaches a peak during the night, at a time the urine becomes most concentrated and most acidic, we have here another contributing factor to a concentrated acid urine eminently suited to cause urate precipitation if the gallbladder dyes were to be considered uricosuric agents. Obviously in such a case the clinical use of these dyes are contrary to the recommended technique for use of uricosuric drugs in general. As a simple measure of potential prophylactic value it would be rational routinely to encourage a liberal fluid intake, since there is no evidence that this would alter the absorption of the dye from the gastrointestinal tract, its excretion by the liver or its concentration within the gallbladder.

As Mudge points out, there is no direct evidence that the uricosuric and nephrotoxic effects of these agents are related. However, certain indirect evidence suggests "guilt by association." They are often given in double or multiple dosage at night during a period of relative oliguria and at a time when the patient may be volume depleted because of gastrointestinal symptoms. This combination of a potent uricosuric effect in a setting of relative oliguria would potentially be even more detrimental if the patient was initially hyperuricemic. Crystals and crystalline casts have been observed in the kidney³ from several patients in whom renal insufficiency developed after the administration of contrast agents. However, their identity has not been established. Positive identification of these crystals should help to determine the relative importance of uric acid deposition.

It should, however, be re-emphasized that even if acute uric acid nephropathy is not the mechanism responsible for all cases of cholecystographic mediated nephrotoxicity it is a potential complication that should be minimized by

maintaining an adequate urine flow or perhaps by administration of pyrazinamide which completely inhibits the uricosinic effects of these contrast agents.

The uricosuric property of the oral cholecystographic agents also leads to a striking reduction in the serum urate concentrations that often persists for 5-6 days. This is obviously important for several reasons. The first being that the serum urate concentrations is of little diagnostic value for a period of days after a cholecystogram. Secondly, the wide fluctuation in serum urate concentration after cholecystography may tend to precipitate an acute attack of gouty arthritis in a patient with a history of gout. Finally these contrast agents or more probably closely related structural analogues yet to be developed may prove useful in the treatment of hyperuricemia since they are both potent and have a prolonged effect compared to presently used hypouricemic drugs.

In the uncovering of the uricosuric properties of contrast dyes we have added a new hazard to practicing good medicine⁴ dangerous complications due to a purely diagnostic procedure.

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The Government Gets Zero On Water Pollution Control

The government has failed totally to bring about any significant improvement in water pollution during the past 15 years is the conclusion of a Ralph Nader task force.¹ The reason for the failure include unenforceable and toothless laws, unconscionable delays by industrial polluters, foot dragging by local and state authorities, insufficient clean up funds provided by the federal government, use of positions in the Federal Water Quality Administration (FWQA) for political patronage and a diffuse unfruitful program of research into water pollution control. This catalogue of woes is the fruit of nearly 2 years of research by 25 people, many of them law students at Harvard.

"The effectiveness to date of the federal role in water pollution control can be concisely

assessed by the virtual absence of any evidence that the seven laws passed and more than 3 billion spent by the federal government have reduced the level of pollution in any major body of water". Mr. Nader observes in the preface to the report. The report points out that 10 years after the program started the FWQA spent a week running salinity counts and computer studies but could not find a single river where any improvement occurred in water quality of 5 years ago. Nader's group asked the same question last year only to find a similar answer.

One reason, though not the most important for this lack of progress, is the dearth of achievement from the research efforts of the FWQA now the water quality office of the Environmental Protection Agency. After ten years and the expenditure of 240 million the research effort at FWQA has failed to provide a simple significant technological innovation which has been implemented on a large scale and is now being used to control water pollution in this country. Congress has shown little incentive for scrutinizing the research budget of the agency since large research budgets allow the officials to claim they are doing something about water pollution without the unpleasant head-on confrontations with industry that regulatory activities would produce.

The emphasis of the research and development program has been on the problems of municipal pollution. Asked to identify the new ideas the FWQA has brought to pollution control the director of research Dr. Stephens could only point to some relatively obscure adaptations of old chemical engineering technology which existed long before the research program got under way none which has yet been applied to any significant degree in practical pollution control situations. Out of 59 FWQA supported research projects dealing with phosphate removal, six on efficiency of sodium aluminate were in the text books already in 1952. "You cannot call a research program successful because it duplicates the discoveries of 20 years ago" the task force acidly reports.

Only one technique which the FWQA has worked on can be considered a genuine innovation, a process of biological denitrification in which the ammonia in sewage is converted first to nitrate and then to nitrogen gas by two species of bacteria maintained in optimal conditions in separate compartments. But as of last

month the promising process has not been used in a single full scale operating waste treatment plant.

The agency even engaged in false promises termed the "Great Phosphorous Removal Hoax." A salutary tale that is possibly not without parallels elsewhere. In 1966 The Department of Interior in which the agency was then situated issued a press release claiming that research in the removal of phosphates from sewage heralded "a major and early breakthrough in water pollution". What prompted the announcement to the press? The task force was informed by an unnamed FWQA official that its laboratory in Ada Oklahoma needed more money since its funds were being cut at the time. Researchers at the laboratory persuaded William Gallagher, the regional director, to cable Washington with the news that they believed the phosphate removal problem was solved. All that was needed the cable said, was money to support extensive field tests. The Ada laboratory got its money, but within a year the project was revealed as a hoax.

Actually in 10 years of FWQA research no real progress towards scientific solution of water pollution has occurred, very little new information, no breakthroughs, no applications of existing knowledge is the verdict of the Nader task force. Perhaps because of this lack of substantive progress funds have been shifted from research to demonstration projects. But the demonstration projects intended to prove to polluters that pollution can be controlled are based on the fundamental misconception that only a lack of technical knowledge is what hinders polluters from installing the necessary equipment.

The Nader report recommends that spending on such demonstration projects should be sharply curtailed. Research grants to industry to study industrial pollution problems should also be cancelled except in exceptional cases since it is industry that has intervened and obstructed pollution control.

The best government research program is a strong enforcement program to generate a demand for practical new pollution control ideas. The commitment to control must come first, only then will the solution follow.—L.H.N.

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Society And Medicine: The Venereal Disease Problem

It is estimated that 2 million cases of gonorrhea were diagnosed and treated in this country in 1970. Under treatment for primary and secondary syphilis were 90,000 people and for latent stages of the disease 200,000 are under treatment. There are also 600,000 Americans walking around with undiagnosed syphilis and there are 540,000 syphilitics in the country today who need treatment. Even three years ago the ASHA conducted a survey that revealed only 10.9 percent of gonorrhea cases and only 12 percent of new cases of infectious syphilis were being reported to health authorities. It is obvious that unless we reach the contacts the spread of these diseases cannot be halted.

We see this in the incidence of gonorrhea during fiscal year ending June 30, 1971 which is expected to soar to 315 per 100,000, the highest in 30 years. The rate of infectious syphilis is also expected to reach its highest point. Figures for the first 6 months of fiscal 1971 show 319,994 reported cases of gonorrhea compared with 293,072 reported in the first 6 months of 1970. Multiply this figure by 10 that are unreported and we have the astounding figure of 3 million cases of gonorrhea.

The figures for syphilis are equally dismal. There were 17,770 cases of infectious syphilis reported during the first 8 months of the present year as compared to 14,908 for the same period last year, a 19.2 percent increase. Multiply this figure by 8 and we really have almost 150,000 cases of primary and secondary syphilis occurring in the last 8 months. The rate dropped for a while, but began to pick up in August 1969.

A major factor in the rise of venereal disease is lack of manpower for epidemiological studies, so that there is a lag—more time for contacts to spread. Evidently we just don't get to them fast enough. The grants to states have totaled 6 million annually in fiscal year 68-71 or about the cost of one B52. Continued inflation and reduced purchasing power of the grants have resulted in fewer case finding. This means a nationwide reduction in case finders and their reduced mobility and inability to halt the spread of syphilis. In addition only 2 million of the 75 million authorized by the Communicable Disease Control Amendment of 1970 was provided for control of syphilis, gonorrhea and some other infectious diseases in the fiscal year just ending.

The same amendment also authorized 90 million for fiscal year 1972. But it is uncertain whether any of this actually will be funded said William J. Brown, Chief of the Venereal Disease Branch of the USPHS.¹

Another aspect of the venereal disease problem is treatment of the acute and chronic phases of the infection. Eight out of 10 cases of venereal diseases are treated by physicians in private practice. A number of young people do not like going to family doctors for fear their parents will learn about it. Furthermore, occasionally the patients are unable to pay for their therapy without their parents help. This could lead to neglect of treatment when the disease immediately appears.

We have so consistently identified venereal disease with sex that anyone who gets it feels as though they are criminals because they happen to have contracted such a disease. One way of providing necessary understanding and facts about venereal disease is the one described by 18 year old J. J. Forish. He told a St. Louis symposium on venereal disease that they have set up an "Operation Venus Hot Line" whose numbers are well publicized via TV and radio. The telephone lines are manned by teenage volunteers trained to handle such calls. If a teenager suspects he may have contracted a venereal disease he can call the number. He does not identify himself but he is urged to seek medical attention at once and assured if he does he can be promptly cured. If they do not like going to their family physician they are sent to a public health clinic. It is interesting that of 500 calls, about half were boys and half girls.

Another element in the spread of venereal disease is educational programs. We need a system of grants in aid for the teaching of venereal disease control. At one time such a system was employed by the Department of Defense for teaching military medicine. The ultimate cost is small if one compares it with the cost of maintaining those crippled by the late manifestations of neglected syphilis. We also need post graduate courses to familiarize physicians with newer diagnostic and treatment approaches for venereal disease. County medical societies could hold seminars to present such information. There is also an urgent need to improve relations between contact investigators and physicians in practice. This will help achieve better reporting of infectious syphilis.

Perhaps we have been too subtle in public education methods. In other countries are prominently displayed in the public eye signs symptoms and availability of treatment of the venereal diseases. We should pay more attention to the high risk teenagers, homosexuals, and those who abuse drugs.

Venereal disease, a mounting scourge, can be eradicated. It has been in some countries. What it needs is the will to do it, and money and professionals to do the job. Society must take a hard look at the priorities in which it is spending its resources. If it does, venereal diseases will rise high on the list needing funding.

—L.H.N

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Cardiac Toxicity From Psychotropic Drugs

The enormous increase in the number and kind of drugs used to treat depression have disadvantages and dangers which need to be kept constantly in mind. The monoamine oxidase inhibitors can cause fatal hypertensive crises if a diet poor in tyramine is not adhered to rigidly. Their inability to mix with other drugs lest hypertension or hypotension supervene and the risk of occasional hepatotoxicity further lower their worth. The elating and habituating effects of amphetamines together with their sympathomimetic activity render them undesirable for the young and potentially hazardous for any patient with cardiac disease.

The phenothiazines and tricyclic antidepressants are widely prescribed especially by physicians who are not specialists in psychiatry for these are reported to be relatively safe and suitable for many patients for whom a trial of treatment with "talk and tablet" seems warranted before resorting to the psychiatrist. Many patients are successfully maintained for years by these means. The original phenothiazine, chlorpromazine, was found to cause cholestatic jaundice and hypotension and so drugs less likely to cause these side effects have been added such as trifluoroperazine, promazine and thioridazine.

Among the dibenzazepine tricyclic antidepressants in common use are imipramine, ami-

triptyline, nortriptylene, protriptylene and many of these drugs are used widely by the profession, but it is mainly from the psychiatrists that reports of adverse cardiac effects of these drugs have appeared. The first sporadic report of sudden death, cardiac dysrhythmia, disturbances of conduction and ECG changes suggestive of infarction in patients on phenothiazine and imipramine-like drugs started to appear in 1963 and others have followed.¹ Recently C. S. Alexander and Nino described disorders of this kind in 7 patients who were under long term treatment with large doses.² Coronary artery disease seemed unlikely to be responsible for the cardiac changes because these patients as well as those noted in previous reports were mainly young.

The phenothiazines used in psychiatry as distinct from related phenothiazines used in the treatment of parkinsonism and others which have antihistamine action and the tricyclic anti depressants have similar actions with differing emphasis. Their psychotropic action is central and they also have hypotensive and adrenolytic and atropine-like effects. The exact mode of action is ill understood but high concentration of catecholamines in blood and urine are thought to result from inhibition of tissue uptake of noradrenaline through competitive binding sites on all membrane. The high levels found are comparable to those accompanying pheochromocytoma and they are found even in patients who are hypotensive while on these drugs.³

In attempts at suicide with these compounds myocardial depression, dysrhythmia, conduction disturbances, and in the ECG a prolonged QT interval and depression of ST segments are described. Suggested antidotes are the cholinergic drugs, neostygmine, or puridostygmine. Beta-adrenergic blocking drugs have also been used.

The cause of the cardiac toxicity remains obscure. The increased plasma levels of catecholamines may be responsible for the arrhythmias, for the complications of prolonged administration of the drugs are not unlike those of pheochromocytoma. They include a "toxic cardiac myopathy" which may or may not be reversible. One of the compounds, thioridazine, is said to have quinidine-like activity and that may account for the prolonged QT interval observed, rather than the shortened interval which would be expected from excess catecholamine. It might be that the raised plasma concentrations of catecholamine together with the depletion of

myocardial catecholamines which followed prolonged administration combine to determine the development of cardiac complications.

Deposition of mucopolysaccharides in small arteries and arterioles have been found in the subendocardium of patients dying after many years of phenothiazine therapy and Alexander and Nino have also found alterations in the ultra structure of myocardial mitochondria. It would seem best to avoid prescribing these drugs for long periods whenever possible. In patients with heart disease, or if arrhythmias and ECG changes appear they should be replaced with psychotropic drugs from another group.

When a tranquilizing agent is all that is needed the benzodiazepine group chlordiazepoxide, diazepam plus meprobamate and methylpentynol are worth considering.—L.H.N.

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Dietary Cholesterol And Serum Cholesterol Levels

For more than ten years now, a sizeable number of physicians have attempted to control their patients laboratory measured serum cholesterol primarily by way of dietary changes, increasing polyunsaturated fat intake, and decreasing cholesterol intake. We recognize that there are other risk factors in the production of atherosclerosis and heart attacks such as hypertension, smoking, emotional stress, genetic factors, diabetes, obesity, and others. However, for some reason, both the news media and the public have become conscious of cholesterol and heart attacks pushing the other risk factors into the background. For many the measurement of a patients serum cholesterol has become the principal indicator of health of ones heart and blood vessels.

What should be of particular interest to the practicing physician but what seems to be overlooked is the stress involved at the moment a blood sample is withdrawn to test for cholesterol. Elek in a review of the effect of stress on blood cholesterol levels cites the acute rise in laboratory measured serum cholesterol that occurred in tax accountants at the height of the tax season, in students during examinations, in military personnel undergoing stress with absolutely no change in diet. There are many other detailed studies¹ to show how any stress or even the misinterpretation of a recurring stressful situation can alter the level of serum cholesterol as measured in the laboratory. The neurogenic control over cholesterol blood levels even instantaneously elevates cholesterol levels. It is quite possible that the single act of drawing blood from a patient especially if he is made aware that the blood sample is intended to reveal the condition of his heart could alter the cholesterol value to a false elevated reading.

If a high cholesterol level is made known to the patient it could be the start of a vicious circle that neurologically raises the serum cholesterol thereafter. This certainly could nullify the original purpose of any so called cholesterol lowering diet by the iatrogenically stress effect (cholesterol raising) resulting from prescribing that rigid diet and in turn making the patient heart conscious every time he sits down to eat.

The American Heart Association¹ advises that each person regardless of his serum chole-

sterol level and the state of his heart should reduce his intake of cholesterol to less than 300 mg per day and increase his intake of polyunsaturated oils. Three hundred mg cholesterol is two whole eggs, 4 ounces of shellfish or 4 ounces of either meat, liver, sweetbreads. Suppose a physician in his search for knowledge utilizes the low cholesterol diet in the new textbook *Current Diagnosis and Treatment*. The author of the chapter on diets in this text is Professor Selden Morgen who suggests not only one egg per day as a part of a cholesterol lowering diet, but also advises shellfish, liver, heart or sweetbreads twice a day. These are foods that are extremely high, if not highest in cholesterol content.

How little do we know about diet affecting blood cholesterol levels and in any way altering the course of potential heart disease? In actual fact the serum cholesterol levels fall approximately 3 mg for each 100 mg of cholesterol removed from the diet. Thus even strict adherence to the AHA diet would only lower serum cholesterol levels about 10 mg. The average American diet contains 600-700 mg of cholesterol a day. The fact is that the body manufactures 2 grams of cholesterol per day on an average. That serum cholesterol levels are endogenously controlled and that the cholesterol intake plays a very small role in serum cholesterol levels.

—L.H.N.

Reference

Pinckney, E. R.: Is Commercialism Controlling the Controversy Over Cholesterol. *Medical Counterpoint*, 3, 37, May 1971.

New Clinical Indications For Angiography

Angiography as a technique for more exact diagnosis is a very safe procedure now that safer dyes are available. It is being extended to patients under consideration for vascular or chest surgery as an alternative to exploratory laparotomy for direct or indirect visualization of pelvic viscera and can play an important role in the diagnosis and treatment of patients with gastroesophageal bleeding.

Dr. Neopito Robles¹ points out that all patients under consideration for vascular or chest surgery should be evaluated by intravenous angiography. By showing beforehand when tumors are too extensive for resection it can help avoid a useless thoracotomy. It can help

identify patients whose symptoms can be relieved by surgery. It also allows clinicians to study hemodynamic function. It is now widely used in pulmonary embolism. But pulmonary angiography can help in other diseases of the chest as well, including lung cancer, tuberculosis and mediastinal tumors.

Angiography can also be an alternative to laparotomy. Up to present time exploratory laparotomy was necessary in most patients with a palpable uterine or adnexal mass. Dr. Reed Altemus, however, believes that a definitive pre-operative diagnosis made possible by pelvic angiography may alter clinical management by at times eliminating the need for an elective exploratory laparotomy, or establish the need for immediate surgical intervention.

There are several indications for use of pelvic angiography. One is obesity, which prevents proper palpation of a mass. Another is palpable but asymptomatic uterine tumors in young women, as well as all trophoblastic tumors. A third indication listed by Dr. Altemus is suspected nonacute ectopic pregnancy or missed abortion. Then there are the cases of amenorrhea lasting over 3 months and without uterine enlargement. Finally is the questionable diagnosis of salpingitis.

It appears that there has been some skepticism about the use of angiography for evaluation of pelvic masses which has arisen because of inexperience, unfamiliarity with its specific indications and accuracy of interpretations. Also the procedure takes time. However, it appears not to be dangerous in young women who have no arterial occlusive disease.

Other procedures are available which are advocated by some for direct or indirect visualization of pelvic viscera. One is Doppler's ultrasound technics. This, however, is still in its infancy. Eventually they may eliminate need for culdoscopy and laparoscopy in diagnosis of certain trophoblastic benign and malignant tumors of the pelvis. However, in some situations only angiography can identify the specific type of the tumor while Doppler's technic may tell only whether the mass is solid or cystic.

Angiography can play an important role in the diagnosis and also in treatment of gastroesophageal bleeding. With angiography it is Dr. Andrew B. Crummy's opinion that it is possible to locate the source of the bleeding, infuse the patient with vasopressin, and then evaluate the effect of this procedure. Direct infusion into the



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splanchnic arterial bed requires a smaller dose of vasopressin than does i.v. administration. Direct infusions also cause fewer side effects such as tachyphylaxis and probably also reduce the effect on the coronary arteries. Once the bleeding is stopped, Dr. Crummy pointed out, the physician has time to decide what to do next. The patient can be put in optimum shape for elective surgery and thereby reduce the hazards of an emergency shunt procedure or ulcer resection.

This type of management would be most valuable for patients who suffer from arterial bleeding because such patients do not necessarily follow the "inexorable course" seen in most variceal bleeders. Eight of his patients were arterial bleeders and their medical condition or age rendered them poor candidates for surgery. Seven stopped bleeding after infusion of vasopressin 0.1 to 0.4 international units per minute for about 12 hours directly into the bleeding vessel. The one who continued to bleed underwent resection.

There were 11 other variceal bleeders all with cirrhosis who received the same dose of vasopressin intermittently for 10 days through a catheter in the superior mesenteric artery. Seven stopped bleeding and 4 of these underwent successful portacaval shunt. In three patients bleeding could not be controlled and they succumbed. In one patient bleeding slowed and stopped but only 2-3 days after the first infusion. Ordinarily bleeding was controlled in a couple hours.

Clearly angiography is becoming an important procedure for both surgeons and clinicians.

—L.H.N.

Reference

Angiography in Certain Clinical Situations. JAMA 216, 28, April 5, 1971.

A Breakthrough In Paget's Disease Of Bone

Paget's disease of bone has been recognized from Egyptian and earlier periods.¹ It is extremely common among the elderly rising from about 1 percent in the 5th decade to 10 percent in the 10th. Often bone lesions may be present without symptoms, but the disease may be painful and disabling and occasionally it leads to bone sarcoma. The commonest complications, however, are partial or complete fractures and

occasionally high output heart failure. In Paget's disease of bone rates of bone formation and resorption are very high for reasons quite unknown. The excess resorption and disorderly formation of bone often results in severe deformity. Biochemical changes include an increase above normal in plasma alkaline phosphatase and in urinary total hydroxyproline (THP).

Until lately, Paget's disease of bone has been more or less untreatable. Aspirin and corticosteroids were disappointing and sodium fluoride has not yielded convincing results. Radiotherapy in doses of 500 to 1,500 rads is said to relieve patients pain the best. There have been no convincing reports of radiological or biochemical improvement after such treatment. Indeed until two years ago Barry² declared that no effective means have been found to make any significant change in the course of the disease.

In the past two years this situation has completely changed as a result of the powerful inhibitory effect of calcitonin on bone resorption. Bijouvet³ reported that calcitonin was effective in Paget's disease in doses ranging from 6-200 units daily. This treatment often relieves pain, lowers plasma, alkaline phosphatase and urinary hydroxyproline levels. In histologic studies evidence is found of a reduced bone turnover. This then represents a breakthrough in the treatment of this common painful disease. Calcitonin however, may not be the final answer. Like other peptide hormones calcitonin must be given by injection and the half-life of the porcine hormone is so short that two or even three daily injections are required. Assuming that a synthetic human or salmon calcitonin should prove more convenient, it is likely that an effective agent will continue to be sought for the treatment of Paget's. The first such agent mithromycin and actinomycin D have been given in this bone disorder with some success, but their toxicity is likely to make them unsuitable for wide use.

The diphosphonates belong to a group of compounds which can be broadly described as crystal poisons depending on the precise compound and its concentration. These substances can inhibit crystallization, crystal growth or crystal dissolution all of which must be concerned at some stage in the process of mineralization and bone resorption. It follows that the diphosphonates might be expected to inhibit bone turnover and it is logical that they should be considered in

the treatment of Paget's disease of bone in which the affected bone may be turning over at 50 times the normal rate.

Smith, et al.,⁴ have now reported their results on 4 patients with Paget's disease in whom they used diphosphonate. They gave a single dose of 20 mg/kg in a tablet form with juice before breakfast. In each patient there was a marked fall in urinary hydroxyproline and plasma alkaline phosphatase when the diphosphonate was given. They interpret these changes as due to suppression of excessive bone turnover by the drug. Other possible explanations for these biochemical changes observed in these patients after diphosphonate were well controlled.

If we assume then that the biochemical effects are due to diphosphonate how are they mediated. It is often considered that excess bone resorption is the primary disorder in Paget's disease of bone and that the disordered and excessive formation is secondary to this. However, we do not know what the primary disorder is due to. In the case of calcitonin the workers have attributed its effectiveness to inhibition of excess bone resorption. In Smith's patients those with advanced bone disease the fall in plasma and urinary hydroxyproline suggests that bone turnover is reduced. This, however, does not tell us whether resorption or formation is primarily affected.

Despite extensive involvement of the skeleton with Paget's disease 3 of Smith's patients did not have severe complaints of bone pain although their biochemical changes were considerable. One of the 4 patients with the least severe biochemical changes had the most severe symptoms and these were relieved during treatment with diphosphonates. The effects observed, however, suggest that the bone activity of the disorder is reduced and in this respect diphosphonates may be beneficial in this disease and perhaps also in other disorders in which bone turnover is excessive.

All clinicians will now wait with much interest for confirmation of Smith's preliminary report from other centers where closely supervised trials may be carried out. Meanwhile, it must be emphasized that the long term effects of the diphosphonates on physiological processes in man are not fully understood and there must be no question of these compounds being used indiscriminately at present. Nevertheless, it can be said that in the last two years there has been a

breakthrough in our approach to Paget's disease of bone and we may confidently expect to control this disease in the near future.—L.H.N.

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Baboons And Atherosclerosis

(Trans. N.Y. Acad. Sciences, 32 821, 1970, Kritchevsky, D.) In most species of animals, except the baboon which closely resembles that of man, one cannot study the role of lipids in atherogenesis since the metabolism of cholesterol differs from that of man.

Even the baboon may not be the best animal for defining the role of cholesterol in atherogenesis since the normal serum cholesterol concentration is approximately 100 mg per 100 ml. and it is not affected by feeding a diet high in fatty acid although this diet is atherogenic in some species.

Feeding starch glucose, sucrose, or fructose raises the cholesterol level by 50-60 percent, but it still remains within a range normal for man. Baboons that develop atherosclerosis and myocardial infarction do so on diets low in cholesterol.—L.H.N.

Progress In Cancer Research

(Desai, S. M., Sarcoma Blockage in Vivo: Rabies-Rous System in chickens, *Nature* 228, 460, October 31, 1970) Desai first injected an attenuated rabies virus (RV) and then Rous Sarcoma virus (RSV). The attenuated rabies virus blocked the growth of RSV. The blockade was transient in nature because rechallenged after 4-9 days with RSV led to growth of the sarcoma.

This observation suggested to the author that the blockade by RS was the cause of the production of an interferon-like substance.—L.H.N.

FROM THE EXECUTIVE DIRECTOR'S OFFICE

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SUMMARY OF ACTIONS COUNCIL MEETINGS

Thursday, May 20, 1971

and

Wednesday, May 26, 1971

Foreword

Because the May 20 meeting was adjourned with less than 50% of the scheduled agenda completed, the May 26 meeting is being recorded as a continuation of the former.

May 20, 1971

I. Attendance

Present were: Drs. Weber, Jr., Grendon, Cramer, Burnham, Backhus, Brandon, Nolan, Granoff, Dean, Gardner, Fabro, Hess, Bradley, Rem, Johnson, Ragland, Jr., Harwood, Roch, VanSyckle, Friedberg, Harkins, Root, Jr., Freedman, von-Glahn, Dambeck and Klare.

Also present were: Mrs. Lindquist, Dr. Patterson (UConn), Mr. Gordon (HCMA), Mr. Olson (FCMA), Mr. Donelan (AMA), Mr. Sullivan, Mr. Tomat and Dr. Richards.

Absent were: Drs. Pelz, Wilson, Palomba, Nemoitin, Luby and LaBella.

II. Organization

The President, Frederick C. Weber, Jr., called the meeting to order, made several opening remarks, and introduced the members of the Council and staff and invited guests. Elections were then held for the posts of Chairman and Vice-Chairman of the Council for 1971-72.

Those elected were: Kenneth F. Brandon, Hartford, Chairman; David A. Grendon, Sharon, Vice-Chairman.

III. Business Meeting

Approval of Minutes

As printed and distributed, it was VOTED to approve the minutes of the meeting of April 7, 1971.

Life Memberships

It was VOTED to approve applications for Life Membership received from the following eligible Active Members:

Arthur L. Delgrego, 301 Orchard Street, New Haven—(NCHMA)—1972

John R. Elliott, Main Street, Canaan—(LCMA)—1972

Joseph Fine, 55 Forest Street, Stamford—(FCMA)—1972

Ralph L. Gilman, Dog Lane, Storrs—(WCMA)—1972

Angelo J. Gulino, 100 Fanning Avenue, Norwich—(NLCMA)—1971

Nicholas F. LaFemina, 60 Dawes Avenue, Hamden—(NHCMA)—1971

Walter N. Nelson, 360 Main Street, Cromwell—(MCMA)—1971

Oscar Rogol, 30 Garden Street, Seymour—(NHCMA)—1971

Resignations, Appointments, etc.

(a) *Committee on Rehabilitation*: It was VOTED to request the Chairman to appoint a member of the Committee on Hospitals to serve as a representative of same as a member of the Committee on Rehabilitation (as required by the Bylaws). The Chairman subsequently appointed David Poverman, New Haven, to serve in this capacity.

(b) *Conference Committee with State Bar Association*: It was VOTED to accept the resignation of John E. Darrow, New Britain, as a member of this Committee. No replacement was required or made.

(c) *CSMS-Designates on CRMP Advisory Board and Executive Board*: Having been apprised that Stevens J. Martin, Hartford, will be unable to continue to serve as a CSMS-designate on the CRMP Advisory Board and Executive Committee (Term: 1/1/70-12/31/72), the Council VOTED to accept Dr. Martin's resignation from these posts with deep regret, sincere

thanks for past service and best wishes for a speedy and full recovery from his recent illness. It was further VOTED to extend a cordial invitation to Dr. Martin to attend and participate in meetings of the Council whenever he finds it possible to do so.

The Council then VOTED to designate Morris A. Granoff, New Haven, a member of the CRMP Advisory Board, to replace Dr. Martin as a CSMS-designate on the CRMP Executive Committee, and it was further VOTED to appoint Edward A. Rem, New Canaan, to replace Dr. Martin as a CSMS-designate on the CRMP Advisory Board for the balance of the term 1/1/70-12/31/72.

Dates and Sites—Annual and Semi-Annual Meetings

- (a) *1972 Annual Meeting*: It was VOTED to approve the Hartford Hilton Hotel, Hartford, as the site of the 1972 Annual Meeting, and April 25-27, 1972 as the dates for same.
- (b) *1973 Annual Meeting*: It was VOTED to approve the Hartford Hilton Hotel, Hartford, as the site of the 1973 Annual Meeting, and April 24-26, 1973 as the dates for same.
- (c) *1971 Semi-Annual Meeting of House of Delegates*: It was VOTED to approve "the Bridgeport area" of Fairfield County as the site for the 1971 Semi-Annual Meeting of the House of Delegates, provided a suitable facility is available on the dates selected, and the date be set with the following choices in mind:

First choice: Wednesday, November 17, 1971

Second choice: Thursday, November 18, 1971

Third choice: Tuesday, November 16, 1971

CRMP

- (a) *Arrangements for Alternates to CSMS-Designates*: At the Council meeting of 4/7/71, it was voted to arrange for a panel of alternates to be available for service in the event that one or more regular CSMS-designates are unable to attend meetings of the CRMP Executive Committee or Advisory Board, in order that full CSMS representation (whether voting members or not) may be present at all such meetings. It was VOTED to set up the panel of alternates as follows:

CRMP Executive Committee: Regular CSMS-designates—Drs. Fabro and Granoff. Alternates—Drs. Johnson, Rem, Weber, Grendon.

CRMP Advisory Board: Regular CSMS-designates—Drs. Fabro, Granoff, Johnson and Rem. Alternates—Drs. Weber (President), Grendon

(President-elect), Garrell, Ragland, Roch, Nolan, Freedman, Cramer and Root.

In operation, it is proposed that the alternate system work as follows: The CSMS-designate who cannot attend a meeting will notify the CSMS office to that effect, informing the staff person of the date, place and time of the meeting scheduled. In the case of CRMP Executive Committee meetings, the "first" alternates will be the other two CSMS-designates on the CRMP Advisory Board (Drs. Johnson and Rem) and "second" in line to be called will be the President (Dr. Weber) and the President-Elect (Dr. Grendon). Obtaining alternates for meetings of the CRMP Advisory Board will be sought by the regular designates in the same way and the staff will try to locate an alternate from the larger panel listed above. In all cases, the staff should be contacted by the designate as far in advance of meetings as possible.

When the staff has received a commitment from an alternate that he will be able to attend the meeting in question, the CRMP office will be contacted and a request made that an agenda be sent forthwith to the alternate (furnishing name and address).

Recognition for Service

The meeting was recessed temporarily at approximately 4:30 P.M. for the purpose of giving recognition to four persons for services rendered to the Society. A listing of the recipients and the services recognized follows:

- (a) *Frank K. Abbot, Waterbury*: Dr. Abbot was awarded an inscribed silver bowl in recognition of the many valuable contributions he has made to the work of the Society, and, in particular for his service as Vice-Speaker of the House of Delegates from 1967 to 1971.
- (b) *Mrs. Vivian C. Feriola*: Mrs. Feriola was awarded an engraved watch in recognition of her twenty years of service to the Society as Assistant to the Editor of the Journal.
- (c) *Miss Dorothy M. Stratton*: Miss Stratton was awarded an engraved watch in recognition of her fifteen years of service to the Society in charge of the Membership Department.
- (d) *Mr. Edward M. Donelan*: It was VOTED to express the thanks of the Council to Mr. Donelan, Assistant Director of the AMA Field Service, for the excellent services he has rendered to the Society, its officers, the Council and the staff since 1968 in maintaining effective liaison with the AMA; in keeping the same posted on

health care developments at the national level; and for volunteering his assistance to all concerned on many, many occasions. This expression of thanks was conveyed to Mr. Donelan in person by the President, Dr. Weber. The action will be communicated to Mr. Donelan in writing, with copies sent to the AMA (from which he is retiring) and the American Dental Association (to which he is transferring his employment).

May 26, 1971

I. Attendance

President in addition to the Chairman, Dr. K. F. Brandon, and the Vice-Chairman, Dr. D. A. Gren- don, were: Drs. Weber, Jr., Cramer, Backhus, Granoff, Dean, Fabro, Bradley, Ragland, Jr., Pelz, Wilson, Roch, VanSyckle, Friedberg, Harkins, La- Bella, Root, Jr. and Klare.

Also present were: Mrs. Lindquist, Mr. Sullivan and Dr. Richards.

Absent were: Drs. Burnham, Nolan, Gardner, Hess, Rem, Johnson, Harwood, Palomba, Nemoi- tin, Luby, Freedman, vonGlahn and Dambeck.

II. Old, New and Special Business

N.B.: The May 20, 1971 agenda was resumed at the point at which it had been discontinued by adjournment.

House of Delegates Actions

Actions of the House of Delegates, taken at the meeting of April 27, 1971, were brought to the attention of the Council as information and/or for implementation as follows:

- (a) *Study of Staff Support for Committees:* It was VOTED to refer to the Ad Hoc Committee on Administrative Organization and Planning, for study and report, the following directive of the House: "That the Council conduct a study of the staff support of committees of the Society and implement the correction of such deficiencies as may be found".
- (b) *Resumption of CSMS-CMS Relationships:* It was VOTED to accept as information and for future guidance the action of the House of Delegates to "confirm the decision of the Coun- cil not to pursue further the possible resump- tion of a corporate relationship between CSMS and CMS, Inc."
- (c) *Resolution on Joint CSMS-COMPAC Projects:* It was VOTED to take cognizance of, and be guided by, a subject resolution and related

action taken by the House of Delegates as fol- lows:

"That the Committee on Public Affairs be di- rected to increase liaison activities with the Board of Directors of COMPAC particularly in the fields of political education and recruit- ment of COMPAC members; and that the Com- mittee be directed to submit to the Council political education and COMPAC membership recruitment projects, developed jointly with the Board of Directors of COMPAC, with cost estimates of same, for prior approval by the Council of the proposed expenditures, the total of such expenditures during the balance of 1971 to be determined by the proportionate funding needs of all other activities of the Society."

"The House also voted to *rescind* the require- ment that if an educational grant to COMPAC is included and identified in a budget submitted to a semi-annual meeting of the House of Dele- gates, the attitudes of the component County Medical Associations be sought and reported to the House."

The 1971 CSMS Relative Value Scale

Having been apprised that several CSMS Sec- tions and allied groups are contending that they had not been consulted officially regarding the finalizing of the RVS submitted to and approved by the House of Delegates, the Council VOTED that all questions and recommendations received from such Sections and groups prior to July 1, 1971 are to be referred to the Chairman of the Committee on Third Party Payments. It was fur- ther VOTED to notify the Chairman of the Com- mittee on Third Party Payments that he and/or the Committee may use his and/or its best judg- ment as to whether proposed changes of a *minor nature* are acceptable for incorporation into the RVS; further, that if any such proposed changes are considered to be of a *major nature* they are to be submitted to the Council for approval before being included in the RVS.

In a related action, the Council VOTED to re- quest the Chairman of the Committee on Third Party Payments to communicate forthwith with Dr. Homer C. Pheasant, California, informing him of the type and extent of the changes made by CSMS in the original 1969 California Relative Value Studies, and asking him for his opinion on the methodology used by CSMS to accomplish these changes and his evaluation of the finished prod- uct. It was further VOTED to ask Dr. Browning, Chairman of the Committee, to join the Council

(or employ other appropriate means) to report (after July 1, 1971) on any minor changes that have been approved for inclusion in the RVS and also to present the response received from Dr. Pheasant regarding the CSMS "final draft".

Admission of Non-Obstetrical Patients to Maternity Units

(a) Pursuant to implementing a subject resolution adopted by the House of Delegates on April 27, 1971, the Council VOTED to direct the Chairman to appoint a small ad hoc committee of three (3) members who are oriented to support the positions and purposes of the resolution, such committee to seek an audience with the Public Health Council to present, explain and discuss the position on this question that was reaffirmed by the House of Delegates; also, to seek an audience with the Governor for the same purposes.

(b) *Resolution to AMA House of Delegates:* It was VOTED to adopt a resolution titled: "Study of Policies of Utilization of Obstetrical Service Beds", and to transmit same to the AMA House of Delegates for consideration and action at its June meeting in Atlantic City, New Jersey. (AMB 5/26/71 "A").

Report—Committee on Statewide Medical Planning

It was VOTED to accept a report submitted by the Committee concerning a proposed "sharing services among hospitals" project of the Connecticut Hospital Association's Research and Education Foundation, and to approve subject recommendations of the Committee as follows:

(1) The Ad Hoc Committee, after careful consideration of the proposal, recommends to the Council that it approve the following three part recommendation:

- a. That the CSMS endorse the proposal which is being submitted to the Kellogg Foundation by the CHREF.
- b. That the membership on the CHREF Committee on Shared Services include at least three representatives from the CSMS. (Since the Committee met, the CHA has revised the original membership distribution to include four representatives from the CSMS.)
- c. That when inquiring into matters concerning professional medical services, the program director and staff of the CHREF request the Council of the CSMS to provide the appropriate expert advice.

(2) The Committee also recommends that the letter of endorsement to the CHREF state that it is the sincere hope of the Committee that this particular venture be more involved with the implementation of projects which will result in the curtailment of hospital costs rather than just stimulating further study.

Report—Committee on Rehabilitation

It was VOTED to accept a report and recommendation of the Committee on Rehabilitation as information and to refer same to the Committee on Statewide Medical Planning for joint discussion with representatives of CRMP. The report of the Committee on Rehabilitation follows:

"The Committee on Rehabilitation urge that the State Medical Society recommend that RMP be requested to establish a program which would make funds available to general hospitals in the state to appoint personnel who would serve as Health Services Coordinators. It should be suggested that these personnel would review all patients as soon after admission as is practicable in order to insure the proper referral of these patients to institutions, agencies, and/or services at the time of discharge."

Date of Next Meeting

Because, after two successive meetings a week apart, the Council was unable to complete action on the agenda distributed for May 20, 1971, the next meeting on Thursday, June 17, 1971, will start at 1:00 P.M., with buffet luncheon being served at 12:30 P.M. for those desiring same.

N.B.: *The foregoing is a summary of the proceedings and action of the Council on May 20 and 26, 1971. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by an interested member of the Society.*

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Anesthesia—Chest Diseases—35 years of age, Certified, wishes solo type practice in a large or medium size community in Connecticut. Interested in running an Inhalation Therapy Department and Intensive Care Unit and have an office in the hospital. Part salaried or other arrangement. Connecticut license. Contact: Rahim Aghai, M.D., 1527 Cambridge Street, Cambridge, Massachusetts 02139.

General Practice—Emergency Room—29 years of age, wishes associate, institutional or industrial type practice in Connecticut. Desire Locum Tenens for the months of July and August and part-time for remainder of year (evenings and weekends). Military obligation completed. Connecticut license.

General Practice—Physician interested in an associate, industrial or group type practice in a medium size community in Connecticut. Connecticut license. Presently in practice. Available immediately. Contact: Elliot S. Phillips, M.D., 1803 Crawford Street, Houston, Texas.

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Internal Medicine—33 years of age, Eligible with National Boards, wishes associate type practice in a large or medium size community in Connecticut. Military obligation completed. Connecticut license. Available immediately.

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Internal Medicine—Nephrology—32 years of age, Eligible, wishes Army type practice in Connecticut. Available immediately.

Internal Medicine—Chest Diseases—Pulmphysiology—40 years of age, Eligible, wishes group or institutional type practice in a large or medium size community in Connecticut. Presently in practice. Available immediately. Contact: Gilao D. Renzi, M.D., 1681 Rachel Est. Montreal 177 Quebec Canada.

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Neuro-Surgery—32 years of age, Eligible with National Boards, wishes group or associate type practice in a large or medium size community in Connecticut. Available immediately.

Neurology—33 years of age, Eligible with National Boards, wishes solo, group or associate type practice in Connecticut. Physician is seeking a practice or salaried position combining Neurology with Rehabilitation Medicine, thereby utilizing training in both fields.

Obstetrics & Gynecology—31 years of age, Eligible with National Boards, wishes group or associate type practice in a large or medium size community in Connecticut. Contact: Marvin Bloshinsky, M.D., 2230 Danbury Drive, Columbus, Georgia 31907.

Obstetrics & Gynecology—46 years of age, wishes solo or associate type practice in a medium size community in southern Connecticut. Military obligation completed. Connecticut license.

Ophthalmology—39 years of age, Eligible with National Boards, wishes solo, group or associate type practice in a large or medium size community in Connecticut. Military obligation completed. Available immediately.

Ophthalmology—28 years of age, Eligible, wishes associate, solo, institutional or industrial type practice in a medium or large community in Connecticut. Available immediately. Contact: Kanwar A. Singh, M.D., 9624 Abaco Ct., St. Louis, Mo. 63136.

Otolaryngology—29 years of age, Eligible, wishes solo or associate type practice in a large or medium size community in Connecticut. Connecticut license.

Otolaryngology—32 years of age, Certified with National Boards, wishes solo or associate type practice in a medium size community in Connecticut. Has trained and experience in Head and Neck, and Plastic and Reconstructive Surgery. Available immediately.

Pathology—36 years of age, Certified, wishes institutional type practice in Connecticut. Special training in cytology. Presently in practice. Available immediately.

Pathology—39 years of age, Eligible, wishes group, associate or institutional type practice in Connecticut. Available immediately.

Pediatrics—28 years of age, Eligible with National Boards, wishes group or associate type practice in a large or medium size community in Connecticut. Military obligation completed. Available immediately. Contact: Arthur T. Blumer, M.D., 406 Jasmine Avenue, Altus AFB, Oklahoma 73521.

Pediatrician—32 years of age, with National Boards, wishes group or institutional type practice in Connecticut. Military obligation completed. Contact: Richard M. Goldstein, M.D., 2509 Pine Street, Philadelphia, Pa. 19103.

Pediatrics—30 years of age, Eligible with National Boards, wishes group type practice in a small or medium size community near metropolitan area (New York City). Contact: A. Michael Kaplan, M.D., 8625 Ent Drive, Wichita, Kansas 67210.

Physician—young, Connecticut licensed physician, Eligible wishes emergency room work on a part-time basis.

Surgery—36 years of age, Eligible with National Boards, wishes group type practice in a large or medium size community in Connecticut. Interested in a practice of general surgery at a hospital with a teaching program, also, would like to join a group of doctors who have an interest in overseas medical work. Available immediately. Contact: David W. Fricke, M.D., 8340 Church Lane, Apt. 1, Baltimore, Maryland 21207.

Surgery—31 years of age, Eligible, wishes group or associate type practice in Connecticut. Contact Loretto A. Gunther, M.D., 7373 Ridge Avenue, Apt. 434, Philadelphia, Pa. 19128.

Surgery—Thoracic—34 years of age, (surgery) Certified; (thoracic surgery) Eligible with National Boards, wishes solo, group or associate type practice in a large or medium size community in Connecticut. Military obligation completed. Connecticut license. Contact: Daniel W. van Heeckeren, M.D. Thorax Kliniken, Karolinska Sjkhs, 10401 Stockholm, Sweden.

General Surgery—34 years of age, Eligible with National Boards, wishes solo, group or associate type practice in Connecticut. Available immediately. Contact: Samuel J. Mazza, M.D., 4 Daybrook Drive, Apt. 114, Ayer, Mass. 01432.

Urology—37 years of age, Eligible, wishes group or associate type practice in a medium size community in Connecticut. Available immediately. Contact: Prasant K. Mitra, M.D., 2829 Sedgwick Avenue, Bronx, New York 10468.

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General Practice — Southern Connecticut (Darien) within striking distance of either New Haven or New York on Long Island Sound is in need of a General Practitioner. A suite of offices with five rooms, two girls who are familiar with the practice who will be willing to stay and introduce the newcomer, and an apartment above containing six rooms that could be used as living quarters. The practice consists of no obstetrics and no surgery; and in the area admission privileges at hospitals are easy to obtain. For further information contact: James V. Macgregor, M.D., 2 Queen Lane, Darien, Connecticut 06820.

Internist—A third internist is needed to join two other internists in the town of Manchester. Office located across the street from a 300 bed community hospital which is currently in the second of a three stage building program. Manchester is located fifteen minutes from Hartford, one hour from New Haven, one hour and a half from Boston and two hours from New York City. For further information contact: Harold J. Lehmus, M.D., or David L. Warren, M.D., 56 Haynes Street, Manchester, Connecticut 06040. Telephone 203-646-1167.

Internist or Generalist for full time position as staff physician to run 25-bed unit in 98-bed rehabilitation hospital in

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Speech Clinicians and Aphasia Therapy: A Survey

Stanley Fisher, ED.D.

Although information is readily available on the number of speech clinicians who were members of the Connecticut Chapter of the Speech and Hearing Association, little is known about the clinicians within this organization who were treating "aphasics". It was the purpose of this study to survey the speech clinicians in the State of Connecticut to obtain some information on their experiences in treating aphasics.

During 1969, a questionnaire entitled an "Aphasia Survey" was formulated and distributed to all the 287 members listed in the 1968-1969 Directory of the Connecticut Speech and Hearing Association (1). One hundred and ninety members (66%) responded to this aphasia survey designed to obtain information regarding the education and experience of these speech clinicians in "aphasia". Only 46 (24%) of the respondents treated asphasics during 1968, and these clinicians saw 346 asphasics in a state whose population was estimated at 3,017,000.* Statistics are not available to indicate the number of aphasics, or stroke patients in the state that would permit us to estimate the percentage of these groups seen by these speech clinicians.

Seventy-six per cent of the speech clinicians that responded to the survey did not see any asphasics during 1968. Whether this is due to lack of interest and/or ability in working with aphasics, or if this is due to lack of referrals cannot be determined by this survey. It does, however, suggest that there may be an untapped resource of speech clinicians who, if needed, may be available to treat "aphasics". This possibility is substantiated in part by

the fact that 77% of the respondents indicated an interest in further training in "aphasia therapy".

Another resource of speech therapists is suggested by the finding that only 11 speech clinicians in the state treated approximately 2/3 of the aphasics seen during 1968. The remaining 1/3 were seen by 25 clinicians, 10 of which saw but one aphasic individual during the year surveyed. Perhaps the latter group could be canvassed to determine their interest in expanding their activities to treat a greater number of "aphasics" (if the need to do so is present). If it is determined that more therapy time is needed to treat individuals with aphasia, a directory of aphasia speech therapists might be established so that greater use could be made of those clinicians who only saw a small number of asphasics during the year.

This survey raises a question regarding the number of "aphasics" there are in Connecticut. If, on one hand, 346 is representative of the number of aphasics that exist, the number of speech clinicians presently available in Connecticut is more than adequate to meet the needs of aphasics. If, on the other hand, it is estimated that there are many more aphasics than indicated in this survey, then steps should be taken to utilize the untapped resources of speech clinicians presently available in the state.

It is recommended that similar "aphasia surveys" be undertaken by other State Regional Medical programs to determine if the therapist to patient ratios are similar to the findings in this survey.

Acknowledgment

It is with pleasure that I acknowledge the help given me in preparation of this paper by Dr. Robert Duffy, of the Speech Department, University of Connecticut, Storrs, Connecticut.

DR. STANLEY FISHER, Associate Professor, School of Education, University of Connecticut, Storrs, Conn.

* *Population Estimates for Counties and Towns as of July 1, 1969. The Connecticut State Department of Health Bulletin, Vol. 51, No. 13, p. 2.*

Anesthesiology Grand Rounds

Yale-New Haven Hospital

Carotid Endarterectomy

Samuel M. Lerner, M.D. and Frederick W. Hehre, M.D., Editors

John E. Fenn, M.D.,* Luke M. Kitahata, M.D. and Michael S. N. Chun, Discussants

Dr. Michael Chun:

A 52 year old female was admitted to the Yale-New Haven Hospital for carotid endarterectomy and femoral-popliteal bypass graft. The patient complained of intermittent claudication in the right calf for the past five years. One week prior to admission she noted severe pain in the toes of her right foot. Chest pain had developed 10 years previously but occurred only on exertion and with radiation to the left arm. Mild diabetes, detected five years ago, was treated with acetohexamide.

Physical examination revealed an obese female weighing 205 lbs. Blood pressure was 130/80 mmHg, pulse rate 80 and hematocrit 45%. Pulses were not palpable below the level of the right common femoral artery. The toes of the right foot were tender. A harsh bruit was audible over the left carotid artery, both superficial temporal pulses were present, and there were rhonchi and wheezes heard over the lung fields. Contrast arteriography demonstrated left carotid stenosis at the carotid bifurcation (Figs. I & II) and right femoral and popliteal artery occlusions with a patent posterior tibial artery at the ankle. Electrocardiography showed evidence of old myocardial injury. It was elected to perform left carotid endarterectomy to be followed 4 days later by right femoral-posterior tibial bypass graft.

DR. SAMUEL M. LERNER is Assistant Clinical Professor and Attending Anesthesiologist, Yale-New Haven Hospital.

DR. FREDERICK W. HEHRE is Associate Professor and Attending Anesthesiologist, Yale-New Haven Hospital.

DR. JOHN E. FENN is Instructor and Attending Surgeon, Yale-New Haven Hospital.

DR. LUKE M. KITAHATA is Associate Professor and Attending Anesthesiologist, Yale-New Haven Hospital.

DR. MICHAEL S. N. CHUN is resident in Anesthesiology, Yale-New Haven Hospital.

From the Division of Anesthesiology and the Department of Surgery,* Yale University School of Medicine, and, the Departments of Anesthesiology and Surgery, Yale-New Haven Hospital, New Haven, Connecticut.

Pre-medication consisted of morphine 15 mg and scopolamine 0.6 mg intramuscularly. Anesthesia was induced with 100% oxygen by mask, thiopental 200 mg intravenously followed by succinylcholine 60 mg to facilitate intubation. Anesthesia was maintained with 60% nitrous oxide-40% oxygen, morphine 20 mg, and curare 40 mg. During the operation the blood pressure ranged from 180/90 mmHg to 116/72 mmHg. Left carotid endarterectomy was performed. Atropine 1.0 mg and neostigmine 2.5 mg were administered at the end of the 3 hour and 45 minute anesthesia to reverse the effect of the curare.

The patient was admitted to the recovery room awake and in good condition, and was given oxygen by loose fitting face mask. Two hours later the patient became agitated and her respirations became rapid and shallow. Arterial blood gases revealed: pH 7.27; pCO₂ 54 mmHg; and pO₂ 94 mmHg. The patient was given morphine 10 mg intramuscularly and aminophylline 500 mg intravenously. After vigorous pulmonary toilet, blood gases showed pH 7.32; pCO₂ 44 mmHg and pO₂ 97 mmHg.

On the fourth postoperative day, a femoral-posterior tibial bypass graft was performed without incident under continuous lumbar peridural anesthesia. The patient complained of chest pain on the second postoperative day, and her electrocardiogram revealed atrial fibrillation. She was digitalized to slow the ventricular response and the rhythm subsequently reverted to normal sinus. The patient's progress was satisfactory with reversal of the right foot ischemia, and she was discharged 12 days after the carotid endarterectomy.

Dr. Samuel M. Lerner: Dr. Fenn, would you please discuss the surgical aspects of carotid endarterectomy.

Dr. John Fenn: Two groups of patients are suitable for carotid endarterectomy: the first, and by far the larger group, are those patients who

have recurrent transient ischemic attacks due to microemboli from ulcerated plaques or carotid narrowing from atheromatous material. The second group consists of those who have asymptomatic stenosis of the extracranial cerebral arteries and for whom other major surgery is planned. This patient falls into the second group. The rationale for carotid endarterectomy in this group of patients is to reduce the possibility of intra- or postoperative cerebrovascular accidents during the second surgical procedure.

The loud bruit over the patient's left common carotid bifurcation prompted investigation of her extracranial cerebral arteries prior to undertaking revascularization of her right lower extremity. As part of the preoperative evaluation, we consider it useful to have a "four-vessel" angiographic study so that both carotids and both vertebrals may be examined. A direct puncture of the carotid artery or selective catheterization is then performed to supply more detailed information.

The patient being discussed today underwent a direct left carotid puncture and her arteriogram is reproduced. (Figs. I & II) Two features are important: first, the marked narrowing of the common carotid bifurcation and in particular, the left

internal carotid takeoff; and, secondly, the large ulcerated plaque which appears as a diverticulum. Such a lesion may give rise to repeated small emboli. It is impossible to judge the degree of stenosis on the basis of the carotid bruit alone. We recommend carotid endarterectomy in the symptomatic patient when the arteriogram discloses more than 50% narrowing of the lumen, or, when an ulcerated plaque is demonstrable.

Carotid endarterectomy was originally performed under local anesthesia, where disturbed cerebral function when the carotid was cross clamped would signal the need for an intraluminal shunt. I prefer to use general anesthesia and an intraluminal shunt in every patient. The Javid bypass shunt does not interfere with the removal of the atheromatous core. The patient is heparinized before the carotid is cross-clamped. After distal control of both the external and internal carotid arteries is established, a longitudinal arteriotomy is made extending from the common carotid across the stenotic lesion into the internal carotid and the Javid shunt is inserted, taking care to avoid air or atheromatous emboli. Cerebral blood flow is usually re-established in less than three minutes and unhurried endarterectomy is performed. A vein patch

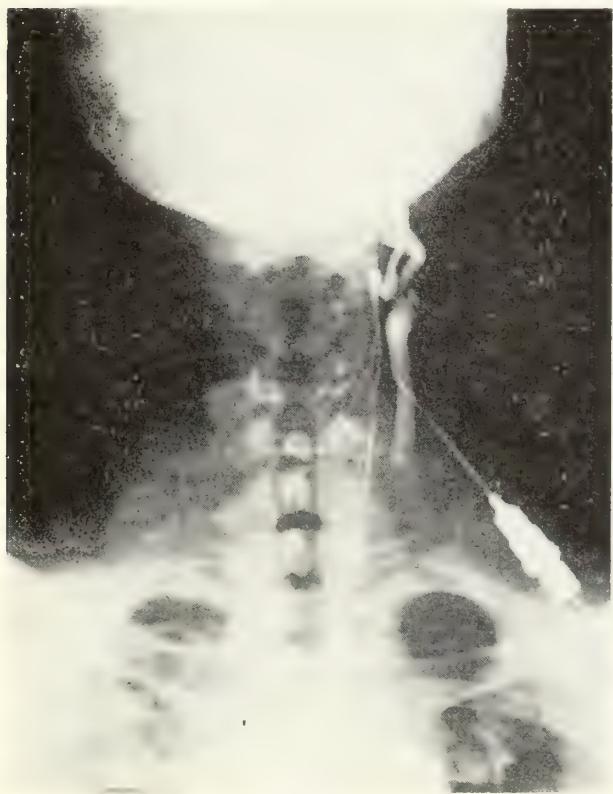


Figure 1

Anteroposterior carotid angiogram showing the ulcerated plaque which appears as a diverticulum.



Figure 2

Lateral carotid angiogram showing marked narrowing at the carotid bifurcation.

may be required to avoid residual stenosis. The arteriotomy is almost entirely closed before the shunt is removed. Flow is maintained with a partially occluding clamp while the closure is completed. Care is taken to establish flow first into the external carotid system so that hidden emboli will be excluded from the internal carotid. The heparin is reversed with protamine sulfate.

The pathologic anatomy of the carotid atheroma is peculiar because it is frequently well-localized. Tacking sutures in the distal internal carotid intima are rarely required to prevent flap dissection. The lesions terminate abruptly, smoothly and shell out easily. Plaques within the atheromata are common and the ulcerations frequently contain loose debris and fibrin.

Dr. Lerner: Dr. Kitahata, would you please discuss anesthetic considerations for carotid endarterectomy, and the implications of the cerebral steal syndrome on the anesthetic management.

Dr. Luke M. Kitahata: The "luxury-perfusion syndrome" was introduced by Lassen in 1966.¹ It is characterized by over-abundant cerebral blood flow relative to the metabolic needs of the brain tissue. In man, as well as in animals, there is evidence of luxury perfusion of localized areas of the brain in some disease states. Red cerebral veins have been seen during craniotomy for brain tumors and in some regions of cerebral infarction. Vessels in the marginally ischemic area of an infarct lose their ability to adjust local blood flow to metabolic needs. With loss of vascular control, flow becomes passive and dependent upon blood pressure.

The deliberate production of hypercarbia in the presence of an acute infarct may be detrimental by dilating normal vessels and increasing flow to normal brain at the expense of flow to an infarcted area, an "intracerebral steal syndrome".²

Solaway *et al.* showed that the extent of infarction following ligation of the middle cerebral artery was decreased when animals were kept hypocarbic.³ The phenomenon of increased regional blood flow provided by hypocapnia in man is called "the Robin Hood syndrome" i.e., "inverse steal". These results apply to a fresh cerebral infarct.

Ehrenfeld, *et al.* measured carotid arterial flow and pressure, both proximally and distally to the surgical occlusion during carotid endarterectomy in man.⁴ Hyperventilation raised the distal "stump" pressure and lowered the blood flow, while hypercarbia increased blood flow but had little effect on stump pressure. They also showed that hypercarbia increased sagittal sinus venous

pressure, reducing the arterial-venous pressure difference resulting in decreased net perfusion pressure. They recommended increasing the net arterial-to-venous perfusion pressure gradient for maximum protection of the brain during general anesthesia for carotid endarterectomy. These procedures are systemic hypertension and hyperventilation, but Crawford, *et al.* determined that systemic hypertension did not prevent cerebral dysfunction.⁵

Clinical data concerning measures to increase tolerance to cerebral ischemia during carotid endarterectomy are difficult to assess because of lack of uniformity of treatment. Monitoring techniques for cerebral perfusion are crude, since a small ischemic area can produce neurologic deficits. The incidence of further neurologic deficits after operation are between 3 and 5 percent, regardless of technique used.⁶ This is true with general anesthesia and hypercarbia without a shunt, with general anesthesia with a shunt, and, when local anesthesia and trial occlusion are employed. This suggests that emboli dislodged during surgery play an important role in postoperative neurologic deficits rather than cerebral ischemia following carotid occlusion. Monitoring methods include electroencephalogram, internal jugular vein pO_2 , oxygen saturation, carotid arterial pressure measured proximal and distal to the occlusion and blood flow estimation, but their value in protecting the brain has not been validated by controlled clinical studies. There is little difference in the ratio of cerebral blood flow to cerebral metabolism when nitrous oxide, halothane, ether or cyclopropane are used. The agent of choice is one which will adequately support the arterial blood pressure.

No method will prevent brain damage in all patients undergoing carotid endarterectomy. Neurological deficits are due not only to acute ischemia during the procedure, but also to embolization, distal thrombosis, dissection of an intimal flap, and, compromise of collateral circulation to the brain. Until techniques for measurement of cerebral metabolism and regional cerebral blood flow become available clinically, I suggest that arterial normotension and slight reduction of pCO_2 be maintained during the anesthetic management of patients for carotid endarterectomy.

Discussion

Dr. Nicholas M. Greene: Anesthetic agents alter the relationship between intracranial metabolism, blood flow, pressure and pCO_2 . There are two levels of oxygen consumption in the brain, one relating to activity, the other to maintenance of nor-

mal cell metabolism. General anesthesia lowers oxygen consumption by eliminating activity but not by eliminating or altering the amount of oxygen required for cell viability and metabolism.

Halothane affects the dose-response curve of cerebral blood flow to $p\text{CO}_2$. If we graph $p\text{CO}_2$ on the abscissa, cerebral blood flow on the ordinate, we get a curve of increasing blood flow with increasing $p\text{CO}_2$. After administration of halothane, the same curve cannot be reproduced, because halothane affects the activity of the vessels to CO_2 causing cerebral vasodilation.

Dr. Lerner: Would the healthy cerebral hemisphere demonstrate a greater degree of vasodilation and draw blood from the hemisphere on the side of arterial stenosis? Can a cerebral steal exist for an entire hemisphere?

Dr. Kitahata: No. The cerebral steal syndrome pertains to a localized area within the brain substance. When one carotid artery is ligated, the circle of Willis provides ample collateral circulation.

Dr. Fenn: One cannot depend on a competent circle of Willis since most patients also have intracranial vascular disease. I do not rely on pharmacologic agents to dilate vessels which cannot be dilated, nor use vasopressors which increase systemic blood pressure but have a negligible effect on cerebral blood flow. I strive to maintain a relatively normal cerebral blood flow by using a bypass shunt and avoiding hypotension.

Dr. Greene: One cannot talk in terms of the arterial blood pressure alone. Cerebral blood flow can be decreased at any given arterial pressure by increasing venous pressure as, for example, with positive pressure ventilation.

Dr. Kitahata: Consequently, we elevate the head of the patient during the surgical procedure; the decrease in venous pressure is greater than the decline in arterial pressure causing an increase in cerebral blood flow.

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The Goals Of Education In Science

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Electrocardiogram of the Month: Pulmonary Embolism

Yale-New Haven Hospital
New Haven, Connecticut

Prepared by
HYMAN M. CHERNOFF, M.D.
Associate Professor of Clinical Medicine,
Yale School of Medicine
Director, Dept. of Electrocardiography
Memorial Unit, Yale-New Haven Hospital

Pulmonary embolism is generally a sudden event which results in acute mechanical obstruction of the pulmonary artery or its main branches. This leads to a sudden rise in right ventricular and right atrial pressure with dilatation of these chambers. This causes the right ventricle to occupy a more anterior position in the chest with the left ventricle rotating to a more posterior position. There may also be a markedly reduced cardiac output and coronary flow leading to acute coronary insufficiency, especially in patients with antecedent coronary artery disease.

Each of these events may result in changes in the electrocardiogram:

a. the right atrial dilatation produces tall P waves in leads 2, 3 and VF (the so-called P-pulmonale). It also may lead to various atrial arrhythmias, especially atrial flutter. The sudden onset

of this arrhythmia in a post-operative patient with phlebothrombosis of an extremity is a signal that pulmonary embolism may have occurred even in the absence of other characteristic clinical signs or symptoms.

b. the sudden increase in ventricular pressure may lead to the following:

1. Conduction defect in the right bundle branch—because the bundle lies superficially in the endocardium and is easily subject to stretch or pressure.

2. the dilating right ventricle occupies a more anterior position in the chest which results in a shift of the mean frontal QRS axis to the right, producing S-waves in leads 1 and VL and small narrow Q-waves in leads 3 and VF.

3. the more anterior position of the dilated right ventricle also produces a shift in the transi-

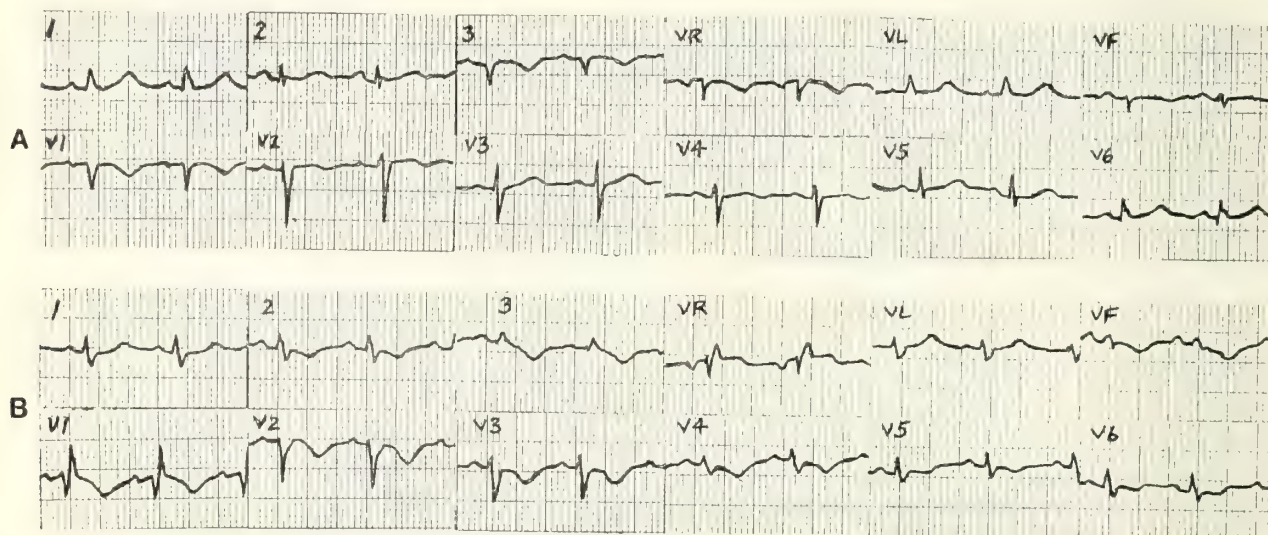


Fig. 1. 60 year old male patient admitted because of sudden onset of severe chest pain and dyspnea. No antecedent history of coronary disease. A. Control tracing taken one year before hospital admission—Except for low amplitude of the QRS complexes it is within normal limits exhibiting a mean frontal QRS axis of approximately minus 20 degrees. B. Tracing taken shortly after admission to the hospital reveals prominent S-waves in leads 1 and VL (mean frontal QRS axis of approximately plus 100 degrees), slight delay in conduction in the right bundle branch, and inversion of the T-waves in all the chest leads, most marked in leads V1, V2, and V3. Following appropriate therapy patient recovered. Repeat tracing taken two weeks later (not shown) was within normal limits.

tion zone in the chest leads to the left resulting in the presence of prominent S-waves in the left precordial leads.

4. T-wave inversions in the chest leads, more prominent in leads V1, V2, and V3 due to delayed repolarization in the right ventricle either as result of overloading of the right ventricle or as a result of coronary insufficiency.

c. Acute coronary insufficiency due to shock and/or anoxia of the myocardium may result in the presence of segmental type ST depression in leads I, VL and in some or all of the chest leads, especially

in patients with coronary or hypertensive heart disease.

The abrupt development of any one or more of these electrocardiographic findings should alert the physician that pulmonary embolism may have occurred. The electrocardiographic changes are often quite transient and may persist for only several hours or days. Frequent electrocardiograms may, therefore, be necessary to expose them to the physician.

Below are tracings from two different patients who incurred pulmonary embolism. These exhibit most of the electrocardiographic changes described above.

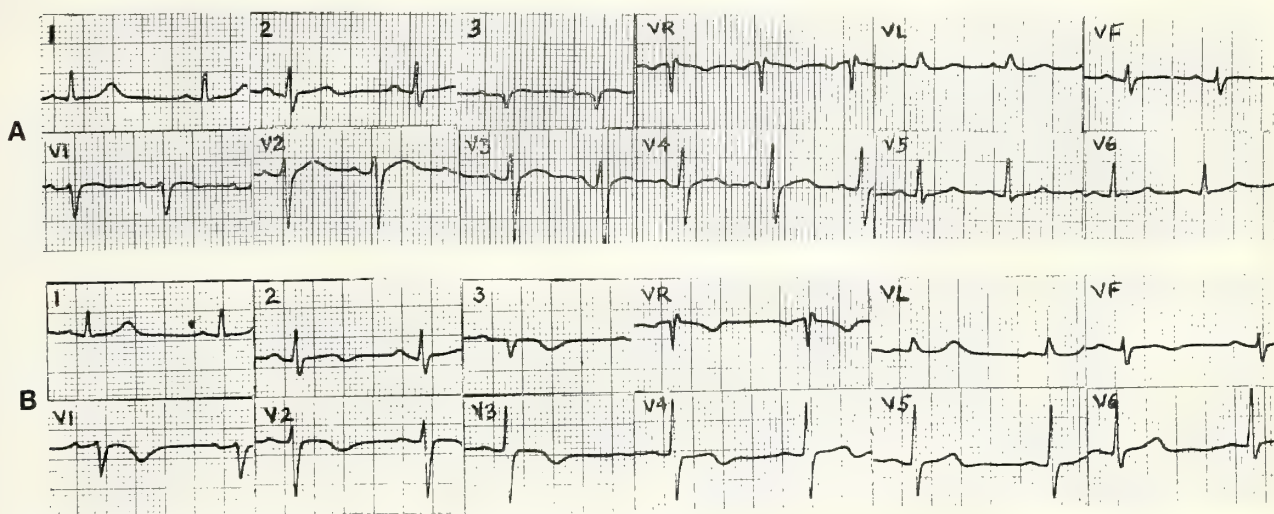


Fig. 2. 74 year old male developed sudden chest pain 4 days after prostate surgery. A. Control tracing preoperatively is within normal limits exhibiting a mean frontal QRS axis of approximately zero degrees. B. Tracing taken shortly after onset of chest pain and dyspnea reveals prominent inversion of the T-waves in leads V1, V2, V3 and V4 and lead 3, and slight inversion of the T-waves in leads 2 and VF. The mean frontal QRS axis is unchanged. Following appropriate therapy the patient recovered. The T-wave changes subsided after 10 days.

Scientific Section Membership Urged For CSMS Members

The Bylaws of the Connecticut State Medical Society (Article VIII, Section 2, Paragraph 2) provide for the formation and operation of scientific Sections as follows:

PAR. 2. SECTIONS

- (A) **PURPOSES:** To conduct the work of the Scientific Assembly and for related purposes, the formation of Sections of the Society may be authorized by the House of Delegates.
- (B) **AUTHORIZATION:** Sections of the Scientific Assembly may be created or discontinued by the House of Delegates in accordance with Article V, Section 1 of these Bylaws. Any group of physician members of the Society having a common interest in a recognized branch of medicine may, through application filed with Council, petition the House of Delegates for authorization to form a Section in that recognized branch of medicine.
- (C) **PETITION:** A petition to the House of Delegates for authorization to form a Section shall be submitted first to the Council. It shall be in writing and include a roster of interested members, officers pro tem, and a set of bylaws which contain the purposes of the Section and the provisions for granting membership, assessment of dues and the election of officers. Such petition shall be examined by the Council and, if found to be in order, shall be transmitted to the next regular meeting of the House of Delegates with recommendation.
- (D) **MEMBERSHIP:** It is the intention of the House of Delegates that the sole qualifications for physician membership in a Section of the Scientific Assembly shall be (1) Active or Life Membership in good standing in the Society, and (2) a bona fide, demonstrable interest in the work of the Section; and that there shall not be other contingent qualifications for such membership. Questions concerning these qualifications shall be resolved by the Council.
- (E) **OFFICERS:** Each Section shall have, as officers, a chairman and a secretary and such other officers as the members of the Section may deem advisable, each to be elected by the voting members of the Section during the annual meeting of the Scientific Assembly and to serve for one year. The rights to vote and hold office in a Section shall be limited to physician members of the Society who are in good standing.
- (F) **MEETINGS:** Each section shall hold a meeting during the course of the annual meeting of the Scientific Assembly and at such other times as the members or officers may deem advisable. The officers of each Section shall arrange the programs for the annual meeting during the Scientific Assembly in accordance with rules established by the Council and the House of Delegates.

All members of the Society, and especially those currently being admitted to membership, are encouraged and urged to join the Section that is concerned with the area of medical practice in which the member engages and/or in which he has a "bona fide interest". The advantages of Section membership are several and meaningful. Some of these are: First, the physician identifies himself with a professional peer group within the Society. Second, he is eligible to participate in the deliberations of his Section, not only those of a purely scientific nature but those of a socio-economic nature as well. Through this mechanism, the member has an equal "voice" with his fellows throughout the state on matters of common interest and concern to practitioners in his field and to the Connecticut profession generally. Third, he has opportunity to serve as the representative and spokesman for his colleagues; i.e., as a Section officer, a committee member, on the Executive Committee, in legislation, etc. Such service is rewarding in that it requires that he keep abreast of important developments in his own and related fields of medical practice and maintain an awareness of the views and interests of the Section membership.

At the present time, there are extant 22 Sections within the Society, most of which are active and serving a useful purpose. They are listed herewith:

Section on Allergy	Section on Ophthalmology
Section on Anesthesia	Section on Orthopedic
Section on Aviation Medicine	Section on Otorhinolaryngology
Section on Dermatology and Syphilology	Connecticut Society of Pathologists
Section on Gastroenterology	Section on Pediatrics
Section on General Practice	Section on Physical Medicine
Section on Internal Medicine	Section on Preventive Medicine and Public Health
Section on Neurology	Section on Proctology
Section on Neurosurgery	Connecticut District Branch of the
Section on Obstetrics and Gynecology	American Psychiatric Association
Section on Occupational Health	Section on Radiology
	Section on Urology

For emphasis, it is repeated that each CSMS member is encouraged and urged to join the Section that is concerned with his area of practice and/or in the work of which he has a bona fide interest. By so doing, he will benefit personally from his participation and will assist the Society in carrying out its functions "to extend medical knowledge and advance medical science; to elevate the standards of medical education; to promote friendly intercourse among physicians; and to enlighten and direct public opinion so that the profession shall become increasingly useful to the public in the prevention and care of disease and in prolonging and adding comfort to life."

Information regarding application for Section membership may be obtained from the Executive Director's Office, Connecticut State Medical Society, 160 St. Ronan Street, New Haven, Connecticut 06511.

WOMAN'S AUXILIARY

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Mrs. Forrest Gibson, Farmington

President-Elect

Mrs. Joseph C. Czarsty, Oakville

First Vice-President

Mrs. George E. Roch, Willimantic

Second Vice-President

Mrs. David F. O'Keefe, West Hartford



Recording Secretary

Mrs. Otto M. Hirschfeld, West Hartford

Corresponding Secretary

Mrs. Gerald V. Levreault, Newington

Treasurer

Mrs. David M. Peterson, New London

State Annual Meeting

The Annual Meeting of the Woman's Auxiliary to the Connecticut Medical Society was held on April 28th at the Wethersfield Country Club. We were privileged to have as speaker, Mrs. Willard C. Scrivner of East St. Louis, Illinois, first vice-president of the Woman's Auxiliary to the American Medical Association.

"If each county auxiliary would recruit and enroll four or five new members this year, our membership goal of 100,000 members could be

achieved," pointed out Mrs. Scrivner, who is chairman of national membership. "Success will not come from wishful thinking, but only by individual personal persuasion on the part of a dedicated, productive auxiliary member."

Connecticut's Report to National Convention In Atlantic City June 20-24

Connecticut is fortunate to have many foreign doctors completing their internships and residencies here. Several counties have extended their friend-

ship to these foreign families. Not only socially but to help them find housing and to adjust to our culture. For example: last May an exotic fashion show was held, accompanied by music and slides. The foreign wives modeled and then served a continental buffet. In July, a family pool and picnic party was held at the county president's home. A dinner party in the fall found the foreign wives bringing the speciality of their country. In December a "Winter Welcome" was extended to the foreign interns' and residents' wives. A large attendance enjoyed the sociability as well as an informal concert of medieval carols by the University students accompanying themselves on instruments of that era. It is a very rewarding experience to get to know these foreign families especially for our own children. Another county raised scholarship funds for allied health career applicants at an International buffet-luncheon with over 150 attending. This helped to combine our interest in health careers scholarships and international friendships. Out state is extremely interested in health career scholarships this year. Our five counties gave \$7,800.00 in scholarships to students entering health careers.

Prepared by Georgine Mendillo

Community Health: A Challenge To County Auxiliaries

No area of auxiliary work offers more of a challenge to a new county president than community health. It covers so much and is related to such vital needs.

The basis for the founding of the AMA auxiliary was concern about community health problems. When the women of Texas wished to start an auxiliary, they won their point by demonstrating what they could do to prevent disease. They campaigned to "eradicate the weed" for the benefit of hay fever sufferers. They asked their neighbors to screen their windows to keep out disease-carrying mosquitos and flies and won the battle for laws assuring the public of good milk.

Times have changed, but community health problems still exist, no matter where we live. The incoming county president should study her community, meet with other health leaders and set up her program according to the needs of her area. She should keep in mind the overall national program and the wishes of the AMA.

Projecting ahead, as we must do, planning a

"Community Health Week" during October is an excellent way to begin. The AMA announces the date in early spring, and materials will be sent. You will be asked to focus on certain problems, but you may also select your own program to fill a certain need, if your medical society approves. Bringing your medical society into the act with you, as well as involving other health-related groups, will bring you greater success.

AROUND THE STATE

New Haven County

Board of Governors Meeting, May 27, 1971 New Haven County Medical Association

The Board of Governors of the New Haven County Medical Association met on Thursday, May 27, 1971 at Rapp's Paradise Inn in Ansonia, Conn. The meeting was chaired by President James H. Root, Jr., M.D.

Councilor Kurt Pelz reported that alternate delegates have been provided for CRMP and that Dr. Morris Granoff was appointed to the Executive Committee of CRMP and that Dr. David A. Grendon was appointed to the Advisory Board of CRMP. Dr. Pelz outlined CSMS policy on clean cases on OB-GYN hospital floors, pre-discharge planning for hospitalized patients who will need rehabilitation, and announced that the new Calif. Relative Value Study book will be published as soon after July 1, 1971 as is possible. He also stressed the fact that Peer Review Organizations will be required in all states in the near future.

President Root reported on his attendance at the AMA socio-economic congress at Caesar's Palace, Nevada. He stressed the acute need for county societies to be educated in the fields of Foundations and HMO's. President Root pointed out how rigid and unhealthy the current bill in Hartford concerning the establishment of a "Hospital Cost Control Commission" was.

Dr. Samuel Climo made a comprehensive report on the Review Committee's handling of its latest 12 cases.

Dr. Robert Boltax reported on his Third Party Payments Committee meeting. He noted that he and Doctors Climo, Freedman and West attended the Westchester County Medical Society's Foundation Symposium, Doctor Pelz attended the Re-

gional Peer Review Workshop, Doctor Root attended the Las Vegas Congress; and that 17 members were going to the Boston Workshop on HMO's on June 10, 1971. He stressed the U.S. Chamber of Commerce report of Health Care. He made a plea for the help of all members in Foundation and HMO planning and urged all local society Presidents to keep him informed about local efforts. In this connection, Dr. Dante Chiappinelli of Milford and Dr. John Hennessey of Meriden reported that they have formed committees to look into HMO's in their local societies.

Dr. Bernard Burnham reported COMPAC membership has increased by nearly 25% in 1971, but that there is still a very long way to go. He then made a comprehensive report on the status of legislation in Hartford.

Dr. Jerome Freedman reported for the Health Care Planning Coordinating Committee in the absence of Doctor Milles, and outlined recent progress in the efforts of the City Wide Neighborhood Corporations to seek a \$200,000 experimental Health Care Delivery System Planning grant. Doctor Freedman pointed out Doctor Milles' statement that "full time staffing" is going to be needed to back up his committee.

Dr. Charles Audet reported on the recent activities of the Committee on Medical Ethics and Deportment in which a breakthrough was achieved in backing up the decisions of his committee.

In recognition of the fine job done in 1970-1971 by former CSMS President Morris A. Granoff, M.D., a resolution was unanimously passed commending his performance. It reads:

WHEREAS, the New Haven County Medical Association was honored during the past year, when one of its members served as President of the Connecticut State Medical Society, and

WHEREAS, Dr. Morris A. Granoff distinguished himself in this capacity, providing the State Medical Society with outstanding and dedicated leadership; therefore be it

RESOLVED, that the New Haven County Medical Association Board of Governors extends its congratulations and commendations to Doctor Granoff in recognition of his many contributions to medicine during his year as President of the Connecticut State Medical Society; and be it further

RESOLVED, that this resolution be forwarded to Doctor Granoff and also made an official part of the Minutes of the Board of Governors.

Under the direction of Allen Traurig, M.D., 12 "provisory members" were indoctrinated and thusly elevated to the status of "active members". They are: Thomas Amatruda, M.D., Waterbury; Adolph Brink, M.D., New Haven; Jack Cole, M.D., New Haven; Victor Hurst, M.D., Waterbury; David Johnson, M.D., Guilford; Paul Myerson, M.D., Derby; Carlton Palm, M.D., New Haven; George Thornton, M.D., Waterbury; Kenneth Williams, M.D., New Haven; Charles VanDerHeide, M.D., New Haven; Augustus White, M.D., New Haven; Arnold Zeff, M.D., Waterbury.

The meeting was followed by a social hour and dinner.

Respectfully submitted,
William L. West, M.D., Clerk

New Health Care Publication Series

Ten major Connecticut health institutions and agencies are jointly sponsoring a new community-based research monograph series, the *Connecticut Health Services Research Series*. The Series will focus on research in the organization, utilization and financing of health services.

The first monograph in the Series, "Patient Care Assessment in Extended Health Care Facilities," by Forrest G. Dressler, Jr., addresses itself to the issue of assuring decent care for our elderly citizens in nursing homes and extended health care facilities. The author investigates the feasibility of implementing alternative methods of patient care review in Connecticut's 238 nursing homes, in light of the utilization and medical review requirements of Titles XVIII and XIX of the Social Security Act (Medicare and Medicaid).

Two or three monographs a year will be published, and only the most important and timely reports emanating from the efforts of the health agencies—either individually or collectively—will be published.

In addition to disseminating information among individuals and agencies within the Connecticut health community, it is hoped that the Series will be a resource for researchers and health professionals in other parts of the country.

For further information on the Series please write:

Mrs. Valeda Slade, Managing Editor
Connecticut Health Services Research Series
Post Office Box 504
New Haven, Connecticut 06502

From: Dean F. C. Redlich

Yale University School of Medicine

Support from the federal government for students of medicine was long in coming to America, and now stands in danger of losing ground among the many competing priorities facing society, Congress and the President.

Federal loan and scholarship support for future physicians is an important priority, however, particularly in times when medical students are no longer as financially secure as they once were, and when students are expressing interest in following paths outside the earning range that once made becoming a doctor an economic 'sure thing,' allowing one to call on traditional bank loans and family savings.

There was a time when most guardians of the tax dollar were relatively indifferent to the idea of supporting medical students, their picture of a physician being a fellow who was so wealthy, and who came from a wealthy family, that the use of precious public funds for his support was suspect.

Every year, in fact, when the question of annual appropriations for the Health Professions Student Loan and Scholarship program appears, this kind of question is still raised, and illustrates that we in medicine and in medical education have not done a good job of explaining that many different kinds of people become physicians, and that they do many different kinds of things once the M.D. is behind their name.

This year an even more serious problem exists with expiration of the legislation authorizing aid to students in medical and other health professions schools.

While it is possible that between the time I write and the time you read this piece the problem will be resolved, it is even more likely that medical students, especially the incoming freshman class of students, will be one month closer to financial peril.

I have no answer to the acute peril other than raising "emergency" funds from private individuals and particularly alumni to meet the crisis and provide students with needed funds. A different kind of solution, however, may be the deferred tuition plan with repayments depending on earned income which Yale has courageously undertaken. Such a plan could possibly be carried out by a

number of cooperating medical schools. This complements but does not substitute for public support.

The question of support for medical students, however, cannot be considered without also taking note of the current general financial situation facing medical schools, and a brief review of that picture may be helpful.

Medical education has always been one of the highest cost items in all of higher education, requiring highly-trained faculty, expensive equipment and building space, and a complex clinical setting. Those costs have accelerated at an unprecedented rate during this decade, and have been only barely met through massive federal support for medical research, which support plateaued in 1966-67 and has fallen (relative to inflation's rise) since.

The decline in federal research resources, as well as the decline in general university funds, coupled with the near absence of compensatory federal support for the education and service functions of medical schools, has been such that more than half of the nation's 103 medical schools now receive special federal grants to help reduce deficits in overall operation costs.

As the authorization law for Health Professions Education Assistance expires, an opportunity is presented for health educators and the Congress to assess the multiplicity of health training priorities of concern to the nation, and for rationalizing the kind, quantity and direction of aid that is needed to avoid future stop-gap programs. Such an assessment is taking place, and will continue during this and next year.

Of the various proposals designed to support medical schools, plans of support based on appropriate capitation and special project support—such as innovating experiments in medical education—seem most promising.

In the interim, however, to return to the particular question of student aid, the incoming class of medical school students may have absolutely no federal loan or scholarship support. A measure to solve this particular problem has, thankfully, been introduced in Congress, and appears to have the

favor of concerned committee and of the Administration.

It should be clear from considering both the financial situation facing medical schools, and the cliff-hanging fashion in which programs to meet that situation and to assist medical students are made, that medical schools are more than ever dependent on public understanding of their functions and on public appreciation of the way in which schools of all health professions contribute to the nation's well-being.

Public understanding, and the understanding of the representatives of the public who make and implement laws, is a quantity difficult to measure, and cannot be artificially created. Schools of medicine and other health professions schools must therefore constantly attempt to foster such goodwill, and must enlist such aid as is appropriate.

One source of such aid has been organized medicine, following the resolution of the American Medical Association's House of Delegates several years ago to support federal loans and scholarships for medical students, support which was much-sought and now is much-appreciated by medical educators.

Another source of aid in fostering public understanding of medical education is the actual practitioners of medicine, those who provide most of the medical care in the nation and whose opinions are sought by patients, community leaders and friends.

Through the Committee on Cooperation with the State's Medical Schools the Connecticut State Medical Society has been working with Yale and the University of Connecticut schools of medicine to foster a spirit of cooperation and understanding, and the success of this effort to date gives me great hope that in a variety of areas medical schools and practitioners of medicine in the future will be closer and working toward commonly-held goals.

In summary, sustained federal support for medical and other health professions students, so vital in times of economic distress for medical schools, comes from the kind of public understanding that can only be created through the cooperation of many individuals and many groups in the medical world.

I hope that through this irregularly-appearing contribution to *Connecticut Medicine*, through the many personal interactions between Connecticut's physicians and its medical schools, and through the work of the Society's Committee on Cooperation that we will know more about each other's problems in the future, and will thereby each be more effective in our respective tasks.

Medical education, as every concerned physician knows, is a continuum of experience which does not end with acquisition of the M.D. degree by a student, any more than a medical school's responsibility ends with conferring that degree.

OBITUARY

Harry Sigel, M.D. 1910-1971

Dr. Harry Sigel, a New Haven dermatologist for over 20 years, died suddenly on Sunday, May 16, 1971. He was 61 years old.

Born on June 9, 1910 Harry Sigel was graduated from Yale College in 1931 and received his degree in medicine from Tufts University in 1934. Dr. Sigel interned at the Grace-New Haven Community Hospital from 1935 to 1936 before serving a two year residency in radiation therapy at Bellevue Hospital in New York. From 1942 to 1944 Dr. Sigel was a resident in dermatology and syphilology at Cincinnati General Hospital.

During World War II Dr. Sigel, then an Army Captain, was stationed in Japan and in California where he was Chief Dermatologist for the 318th General Hospital. In 1949 Dr. Sigel became a diplomate of the American Board of Dermatology. He maintained an office for the practice of this specialty at 85 Trumbull Street, New Haven.

A member of the clinical staff of Yale for the past 23 years, Dr. Sigel was Assistant Clinical Professor of Dermatology. In addition he was Assistant Attending at the Hospital of Saint Raphael, Associate Dermatologist at Rocky Hill Veterans Administration Hospital, and Consultant in Dermatology to Milford Hospital. Concerned with the prevention of venereal disease, Dr. Sigel devoted much time and energy to the venereal disease clinic at New Haven Health Department. He was interested in research, especially electrocutaneometry, the measurement of cutaneous sensibility with square wave current.

In 1940 Dr. Sigel married Sylvia Molestein. They have two daughters, Mrs. Brenda Weiner of Cheshire and Miss Rolinda Sigel, a music therapist at the Fairfield Hills Hospital in Newtown. Whenever Dr. Sigel could spare the time from his round of medical and research activities, he enjoyed playing the violin in the company of his family.

Harry Sigel was a member of the American Medical Association, the Connecticut State Medical Society, the New England Dermatologic Society and the Society for Investigative Dermatology as well as the Yale Club of New Haven and the Faculty Club. He is listed in *American Men of Science*, *American Men of Medicine* and *Who's Who in the East*.

Aaron B. Lerner, M.D.

In Memoriam

Boardman, Albertus K., University of Pennsylvania, 1899. Dr. Boardman was a general practitioner in the New Haven area for 59 years prior to his retirement in 1966. In his early days, Dr. Boardman visited his patients by foot, bicycle and horse and buggy. He purchased his first car, a Maxwell, in 1907. At the time of his retirement, Dr. Boardman estimated that during his 59 years in New Haven, he had delivered more than 2500 babies. Dr. Boardman served in the Second Company of the Governor's Foot Guard for 50 years. He retired as a major. He was a member of the Connecticut State Medical Society and the American Medical Association. He died May 13, 1971, at his home in Centerville, Mass. at the age of 96.

Coombs, Harrison S., Tufts College, 1945. Dr. Coombs was a pediatrician in the Fairfield area since 1950. He served as a Captain in the U.S. Army Medical Corps in World War II. Dr. Coombs was a fellow of the American Academy of Pediatrics and a member of the New England Pediatrics Society. He was also a member of the Connecticut State Medical Society and the American Medical Association. Dr. Coombs died May 22, 1971, at the age of 50.

Jarrett, William A., Harvard Medical School, 1934. Dr. Jarrett was a pathologist in the Fairfield area since 1951. He served as Captain in the Marine Corps, in World War II from 1940-1946, and was also a member of the College of American Pathologists. Dr. Jarrett died at his home in Highland Park, New Jersey, April 12, 1971, at the age of 62.

Paul, John R., Johns Hopkins, 1919. Dr. Paul was an internist in the New Haven area since 1928. He was a professor emeritus at the Yale School of Medicine and one of the world's leading researchers in poliomyelitis. Dr. Paul served during World War II as a consultant to the Secretary of War, as head of the Neurotropic Virus Commission in North Africa and Europe. He was an honorary member of the Royal Society of Medicine in London and a fellow in the American College of Physicians, the Royal Society of Health and the Royal College of Physicians. He was also a member of the Connecticut State Medical Society and the American Medical Association. Dr. Paul died May 6, 1971, at the age of 78.

Meeting Notices

The information on this "notices" page is offered as a service of all specialty groups and allied health agencies in order to publicize postgraduate educational opportunities available to subscribers. The deadline for publication in Connecticut Medicine is the tenth of the month preceding, date of issue. Send copy to: Connecticut State Medical Society, 160 St. Ronan Street, New Haven, Connecticut 06511.

GENERAL

April 25-27, 1972—Tuesday-Thursday
180th Annual Meeting of the Connecticut State Medical Society

The Hartford Hilton, Hartford
August 29-30—Sunday and Monday
31st Annual AMA Congress on Occupational Health

Jackson Lake Lodge, Grand Teton
National Park, Wyoming
September 30-October 2—Thursday-Saturday
Thirteenth National Conference on Physicians and Schools
LaSalle Hotel, Chicago, Illinois

ELECTROENCEPHALOGRAPHY

September 13-15—Monday-Wednesday
Clinical Electroencephalography
Minneapolis, Minnesota
Contact: American EEG Society, Dr. D. W. Klass,
Mayo Clinic, Rochester, Minnesota 55901

OTOLARYNGOLOGY

October 4-9—Monday-Saturday
Postgraduate Course in Laryngology and Bronchoesophagology
Department of Otolaryngology
Abraham Lincoln School of Medicine
University of Illinois, P.O. Box 6998
Chicago, Illinois 60680
October 8-9—Friday-Saturday
Postgraduate Course in Otolaryngology for the Family Physician—AAFP—9 hours.
University of Miami School of Medicine
Miami, Florida 33152
October 23-29—Saturday-Friday
Annual Otolaryngologic Assembly of 1971
University of Illinois Hospital Eye and Ear
Infirmary, Chicago
Contact: Otolaryngology, P.O. Box 6998,
Chicago, Illinois 60680

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WARM LINE

clinical management/ drug abuse crises

Practicing physicians can expect to be confronted at almost any time with a medical crisis related to the misuse of psychoactive drug substances. Increasing numbers of people are misusing these drugs and a dramatic increase in the number of drug-related medical crises has been noted during the past several years.

Although much information on this subject has been disseminated, the need for practical advice on basic clinical management of these crises has become greater.

Three physicians, each of whom has had extensive practical experience in dealing with drug abuse problems, have created a series of three-minute audiotapes detailing basic medical approaches to the most frequently encountered drug abuse crises. Dr. David E. Smith is Director of the Haight-Ashbury Medical Clinic in San Francisco, California, and Assistant Clinical Professor of Toxicology, University of California Medical Center at San Francisco.

Dr. William Abruzzi was Medical Director of both the Woodstock and Powder Ridge Rock Festivals and is currently the College Physician, State University of New York at New Paltz, New York.

Dr. Edward C. Senay is the Director of Clinical Research for the Illinois Drug Abuse Program and Associate Professor of Psychiatry at the University of Chicago School of Medicine, Chicago, Illinois.

Their taped discussions are on automatic telephone equipment for utilization at all times. The opinions given regarding treatment modalities are those of the physician speaking.

**Amphetamines
Hallucinogens
Opiates**

**Dr. David E. Smith
Dr. William Abruzzi
Dr. Edward C. Senay**

For further information, contact your Roche Representative or write:

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Nutley, New Jersey 07110**

Connecticut Medicine

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Manuscripts, including references or bibliography, must be typewritten, double-spaced on white paper 8½ x 11 inches with adequate margins on firm paper. The original copy, not the carbon copy should be submitted. Carbon copies or single spaced manuscripts will not be considered. Authority for approval of all contributions rests with the Editorial Board, and the Board reserves the right to edit any material submitted. Receipt of manuscripts will be acknowledged and unused manuscripts returned. Accepted manuscripts become the permanent property of the JOURNAL and may not be reprinted elsewhere without permission from both the author and CONNECTICUT MEDICINE. The author is responsible for all statements made in his work, including changes made by the copy editor.

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The first page should list title, the author (or authors), degrees, hospital positions and any institutional or other credits. References should conform to the usual style of the JOURNAL (listing name and initials of author, title of article, journal, volume number, first and last pages and year), and should be cited numerically in the order in which they appear in the text; the number should be limited to the absolute minimum.

LENGTH OF ARTICLES

Ordinary articles should not exceed 3,000 words (approximately 3 printed pages). Under exceptional circumstances only will articles of more than 4,000 words be published.

ILLUSTRATIONS

Illustrations should be numbered consecutively and indicated in the text. The number, indication of the top, and the author's name should be attached to the back of each illustration. Legend should be typed, numbered, and attached to each illustration as well as typed on a separate sheet. Photographs should be clear and distinct; drawings should be made in black ink (preferably India ink) on white paper. For half tones, glossy photographs should be submitted. CONNECTICUT MEDICINE will bear the cost of printing two cuts accompanying manuscripts submitted for publication. The cost of printing more than two cuts must be borne by the author.

NEWS

Our readers are requested to send in items of news, also marked copies of newspapers containing matter of interest to physicians. Letters intended for publication should be marked "For Publication." We shall be glad to know the name of the sender in every instance. All copy should be received one month prior to the expected date of publication.

ADVERTISING

All advertising copy of products approved by the Advertising Committee of the State Medical Journal Advertising Bureau of Chicago shall be accepted for publication unless such copy is in conflict with official policies of the Connecticut State Medical Society. Non-Bureau advertisements in this issue have been reviewed and found to comply with the principles of advertising of the State Medical Journal Advertising Bureau, Inc. The acceptance of advertisements does not necessarily imply endorsement of any product or service by CONNECTICUT MEDICINE.

Material other than original articles should be received not later than the 10th of the month PRECEDING date of issue.

REPRINTS

Reprint orders should be returned at once as the type will be destroyed immediately following publication of the manuscript. The JOURNAL does not stock reprints of the articles published. Requests for individual reprints should be sent to the author.

Communications should be addressed to Louis H. Nahum, M.D., Editor, CONNECTICUT MEDICINE, 160 St. Ronan Street, New Haven, Conn. 06511. Telephone 865-0587.

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Connecticut Medicine

Connecticut State
Medical Journal

Volume 35/August 1971/Number 8

LEAD AND THE ENVIRONMENT: II.

Martha Lepow, M.D. and Thomas Dolan, M.D., Guest Editors



Little Girl Chewing Windowsill

(See Page 501)



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Dip!



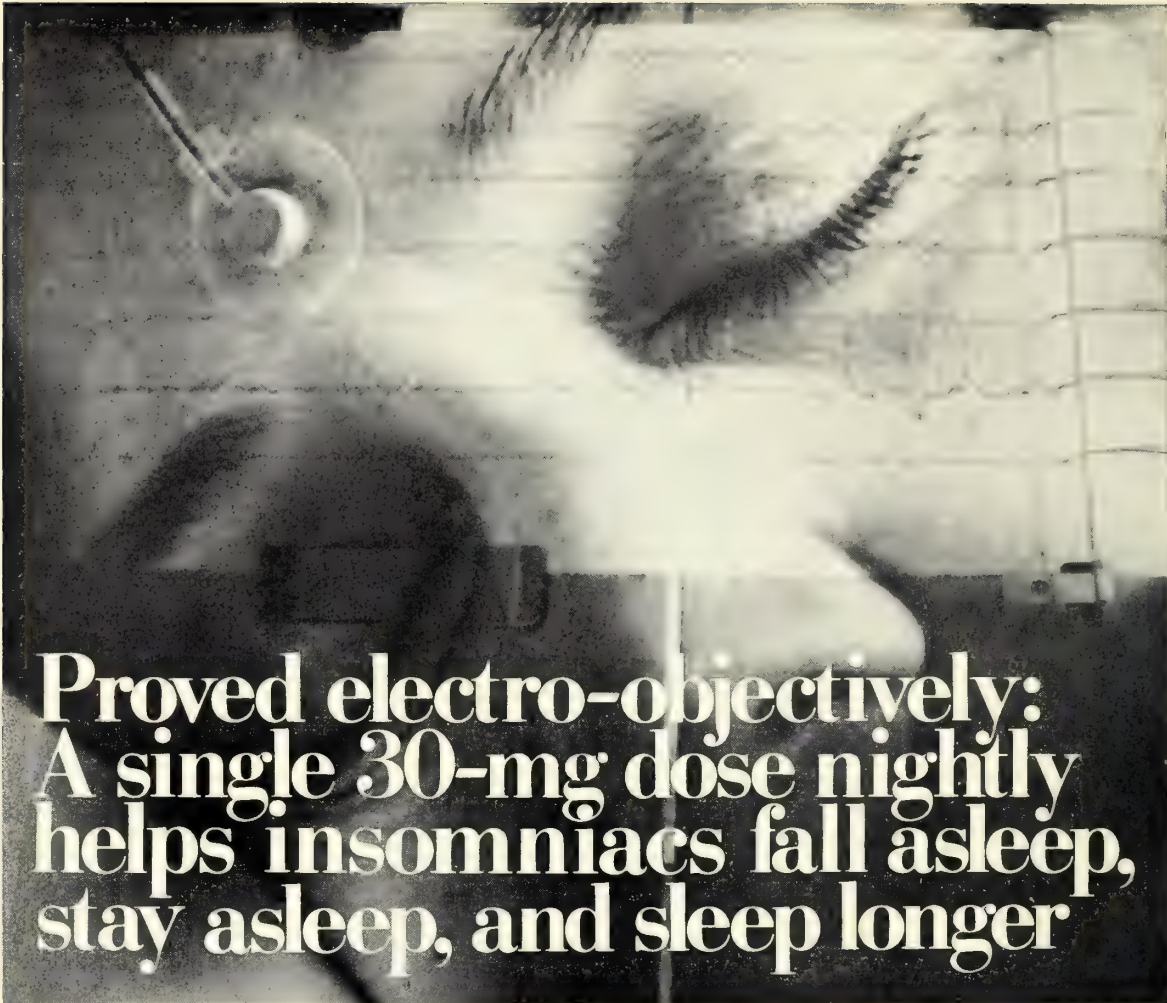
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Moreover, Dalmane 30 mg was found to be useful in all common types of insomnia in which it was studied. Of drugs studied in a sleep laboratory,¹ Dalmane 30 mg was the only one that consistently reduced sleep induction time and maintained sleep nightly for 14 consecutive nights of use.

Confirmed clinically

Fifty-three controlled studies using a paired-night, double-blind crossover design have evaluated Dalmane clinically. In the majority of these, Dalmane (flurazepam HCl) significantly reduced sleep induction time and increased sleep duration. Dalmane and a placebo were alternated on successive nights in 2010 insomniacs, 1706 of whom were studied for a single night-pair, and the remainder for as many as fifteen paired-nights. A patient preference for Dalmane was apparent in the paired-night studies.

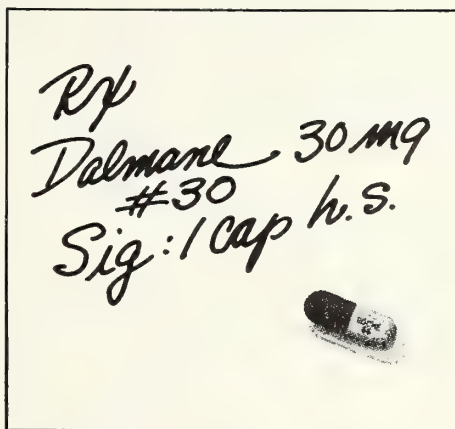
Dalmane was also preferred to certain hypnotics in two separate preference studies. In each of two double-blind studies, Dalmane 30 mg retained effectiveness for the total period of seven consecutive treatment nights, according to subjective/objective evaluations.

In summary, Dalmane is useful in all types of insomnia characterized by difficulty in falling asleep, frequent nocturnal awakenings and/or early morning awakening. It can be used effectively in patients with recurring insomnia or poor sleeping habits, and in acute or chronic medical situations requiring restful sleep.

Dalmane (flurazepam HCl) is generally well tolerated

In most instances in which adverse effects with Dalmane were reported, they were mild, infrequent and seldom required discontinuation of the drug. Dizziness, drowsiness, lightheadedness and the like were the side effects most frequently noted, particularly in elderly or debilitated patients.³ Instances of hepatic dysfunction, paradoxical reactions (excitement) and hypotension are rare with Dalmane, and morning hang-over is relatively infrequent. In studies to date the effectiveness of Dalmane for recommended periods of use is maintained without need to increase dosage.

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Precautions: In elderly and debilitated, initial dosage should be limited to 15 mg to preclude oversedation, dizziness and/or ataxia. If combined with other drugs having hypnotic or CNS-depressant effects, consider potential additive effects. Employ usual precautions in patients who are severely depressed, or with latent depression or suicidal tendencies. Periodic blood counts and liver and kidney function tests are advised during repeated therapy. Observe usual precautions in presence of impaired renal or hepatic function.

Adverse Reactions: Dizziness, drowsiness, lightheadedness, staggering, ataxia and falling have occurred, particularly in elderly or debilitated patients. Severe sedation, lethargy, disorientation and coma, probably indicative of drug intolerance or overdosage, have been reported. Also reported were headache, heartburn, upset stomach, nausea, vomiting, diarrhea, constipation, GI pain, nervousness, talkativeness, apprehension, irritability, weakness, palpitations, chest pains, body and joint pains and GU complaints. There have also been rare occurrences of sweating, flushes, difficulty in focusing, blurred vision, burning eyes, faintness, hypotension, shortness of breath, pruritus, skin rash, dry mouth, bitter taste, excessive salivation, anorexia, euphoria, depression, slurred speech, confusion, restlessness, hallucinations and elevated SGOT, SGPT, total and direct bilirubins and alkaline phosphatase. Paradoxical reactions, e.g., excitement, stimulation and hyperactivity, have also been reported in rare instances.



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(This is the second of a two-part series on lead poisoning).

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Subscription rate for non-members \$15.00; Student-Members, interns and residents \$7.50; single copy \$1.50.

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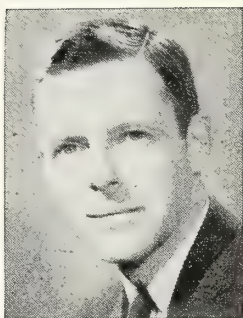
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PRESIDENT'S PAGE



Computer technology has found increasing application to information processing tasks in a wide variety of industries. Developments in this field have progressed extremely rapidly and computer use is as much a part of daily life as the telephone and the automobile.

For years computers have been of use in billing techniques and information storage in hospitals. More recently they have expanded their use into other fields. One is the automated patient history, the patient answering an extended list of prepared questions for storage and later retrieval and print out for use by doctors in hospitals and clinics. This has not become economical for private offices as yet. Another use is the automated multiphasic health testing in which a large number of tests are performed and presented, with abnormal results flagged for the attention of the doctor. Such a system may include ECG interpretation as well as a large variety of blood analyses, urine, blood pressure, pulmonary function, vision and hearing measurements. Obviously the computer must be programmed to accept only certain normal parameters and all values outside this range are called to the attention of a physician who can make a judgment decision.

Experiments are underway in the area of medical diagnostic systems as an aid to the physician, and even for use in areas where a doctor is not available.

The use of computers in physiological monitoring is well known in post-operative and intensive care units as is their use in automated laboratories.

Many benefits can be readily derived from proper and scientific use of these various technical advances. Mass screening and early detection of disease has been promoted as a great advantage. Time can be saved and, perhaps in a large enough volume, costs can be reduced. Research based on a large volume of data collected could be of future value in a variety of medical fields.

But there is another side which must be considered and so far has not been satisfactorily solved. Basic in the doctor-patient relationship is the matter of confidentiality. Although it is possible to introduce checks and safeguards into computer-stored patient history and other data, this can be cumbersome and, of course, subject to failure. Psychiatric histories and interviews create the biggest dilemma when it comes to considering computer storage of confidential patient information.

A similar question comes up when informed consent is considered. Most patients are not aware that the data from their hospital record is summarized and stored on a computer for future use of any kind. However, a large amount of information is already on the computers of the Medicare and Medicaid payors. The question to be decided is how much can be stored without letting the patient have a right to decide if he agrees to the procedure.

So, despite new techniques and scientific advances in the field of information storage, handling and analysis, we still have the patient to consider. We must be aware of his emotions and anxieties, his unanswered questions, and respond with solutions to his problems on a day to day basis. We also have the patient's family to meet with and explain details of the illness. We have to maintain the confidence of all these involved individuals. The best course would seem to be to maintain confidentiality in the strictest ethical sense and keep the patient informed to the best of our ability and his interest. The computers can take care of their area of competence and not until they can meet the doctor's standards of confidentiality can they be given data of that nature.

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The Significance of Pica in Children

Martha F. Leonard, M.D.

Lead paint in the environment is never desirable for young children because of their early natural tendency to explore by mouthing. It becomes a serious threat to those children who continue to chew on and swallow non-edible substances, a practice known as pica. Nearly all children with lead poisoning have pica. All children with pica are potential victims of lead poisoning.

Cravings for materials unfit to be used as food have been known at least since the time of Galen, and the term "pica" was first used by Ambrose Paré in the sixteenth century.¹ Pica was the medieval Latin word for magpie, a bird with a voracious and indiscriminate appetite.

Pica is generally defined as the tendency to repeated ingestion of nonedible substances after the age of 18 months. It is widely prevalent throughout the world, and has been described in domestic and wild animals as well as humans.² Children with pica seek out and eat a variety of materials such as dirt, paint, plaster, cigarette butts, stones, insects, chalk, hair, yarn, or paper. Some children prefer a particular substance, but many eat indiscriminately any object they can find in a persistent and insistent way.

In spite of its long history, its prevalence, and its importance in the chain of events which lead to lead poisoning and other kinds of toxicity, there are many unanswered questions about pica. What is its incidence? Why do certain children seek out all sorts of inedible and harmful objects to swallow? To what extent is the tendency to pica constitutional? What are the roles of nutrition, feeding practices, and relationships with parents? There have been many clinical descriptions and a few controlled studies, but well-documented data are still needed.

The incidence of pica is difficult to determine, for many parents regard it as benign and do not mention it. Most studies of incidence are made in poor rural or inner city areas,² and its prevalence, especially in children from upper-socio-economic levels is unknown. Bartrop³ determined by interview of

186 Boston families with 439 children that 42% had pica at the age of 1-2 years, with a gradually decreasing incidence to 7% at 4-5 years. There was a tendency to a slightly higher incidence in black children than in white, but the difference was not statistically significant. The incidence of mouthing of inedible substances in the same children was more than twice as great—82% in the children 1-2 years old, falling to about 42% at 4 years. The curve for finger sucking resembled the curves for both mouthing and pica and occupied a position intermediate between them. Nail biting was shown to increase with age, from 2% in the children in the 1-2 year group to a maximum of 17% at 5 years. Some of these findings may be biased toward the high side by whatever factors led these families, out of the 500 selected at random, to agree to the interview, and by the definition of pica as the ingestion of a non-food substance within the preceding 14 days, rather than over a longer range of time. The children mouthed or ingested an average of two different substances.

How does pica come about? Sucking, biting, and mouthing are normal activities in infancy. Beginning with reflex sucking, the infant learns to use his mouth for eating, for exploration of objects, and for the pleasure of licking, sucking, and biting. He takes many objects to his mouth, and comforts himself when tired or in distress by sucking a finger, thumb, or pacifier. The degree of interest in mouthing differs markedly between infants. Creeping and walking give the curious baby opportunities to find and taste new substances. Through zealous watchfulness and countless interventions, most parents protect the infant from eating harmful substances and teach him what he may eat and what is inedible. By the age of 12 to 18 months, the need for sucking normally diminishes, and the child has acquired new and more mature ways of exploration, play and achieving comfort. The teachings of his parents and his own experiences gradually help him to limit his eating to foods, even though he may still like to suck a thumb or finger in times of stress or to mouth things experimentally without ingesting them.

Children with pica fail to make the transition

DR. MARTHA F. LEONARD, Associate Professor of Clinical Pediatrics, Child Study Center and Department of Pediatrics Yale University School of Medicine.

from indiscriminate mouthing to the selective eating of only digestible foods. What interferes? There is no one known cause, but a number of factors have been associated with the occurrence of pica. The history of Joey illustrates many of them.

Joey has been followed closely in a longitudinal study of first-born children of disadvantaged families.* He lived with his young, unmarried mother in an apartment of an old deteriorating house. His mother was aware of the danger of lead poisoning and the peeling paint and holes in the plaster in her apartment. She assured the pediatrician that Joey never had a chance to eat any paint. Joey was an active, alert baby for the first few months. Then he became relatively inactive and quiet. His health was satisfactory, although he was a little slender. He ate well, but like his mother preferred starchy foods, sweets, and sodas to meat and vegetables. His early development was age adequate as measured on developmental tests except for some delay in vocalizations and a general lack of zest or initiative.

Joey began attending an infant day care center, which was part of the research study, at the age of 11 months, but his attendance was irregular. When he was about 15 months old, it was noticed at the center that he would grab handfuls of dirt or sand and try to eat them. He had to be watched very carefully, for he did this quickly and often, and was not deterred by the efforts of teachers to stop him. It was found that he had been eating dirt at home for several months. Blood tests showed a hemoglobin of 9 grams per 100 ml. of blood and a blood lead level of 0.045 mg. per 100 ml. (above normal, but not in the range which is known to cause toxicity). What was it about Joey, his parents, and their lives together which predisposed him to this symptom of pica?

Joey had a strong suck from birth and an intense interest in mouthing. He was given a pacifier early on the suggestion of his pediatrician, and his mother used it often to stop his crying. On the other hand she disapproved of his mouthing toys, and repeatedly took away anything which he put into his mouth. She stopped the bottle and the pacifier abruptly at 15 months. The mother was a quiet, bland person with

many health concerns of her own. She often seemed depressed. She was not interested in food, and slept excessively. She held Joey for long periods, but did not play much with him or talk to him. She left him with friends or relatives on many occasions, and seemed disbelieving when others pointed out the signs that he had missed her. In the day care center Joey went to any adult with outstretched arms to be picked up. Joey saw his father occasionally at unpredictable intervals.

Joey illustrates many of the factors which we have come to associate with pica—maternal and paternal deprivation, unusual fostering or forbidding of mouthing activities, multiple family problems, and mild anemia. Joey's mother was depressed and preoccupied by the stresses of poverty, lack of personal satisfactions, illness, and poor housing. She did not have the energy or the empathy to meet her child's needs in an appropriate way. She was concerned about his physical well-being, but unaware of his emotional needs and not receptive to suggestions about them. She left him with changing or inadequate mother substitutes, and his attendance at the day care center was too irregular for him to develop strong trusting relationships there. This is a common form of maternal deprivation—not deliberate neglect or rejection, but limited and impoverished nurturing.

Paternal deprivation occurred also. Joey's father visited occasionally, but was not supportive to Joey's mother or helpful in the child's care. He, like the mother, subjected Joey to unexpected and probably painful separations.

Joey's mother gave conflicting messages about mouthing. She promoted excessive and indiscriminate use of the pacifier. Preoccupied with her own needs, impatient, or exhausted, she could not tolerate his crying. Without trying to determine the cause of his distress, she put the pacifier into his mouth every time he fussed. Since his mother did not distinguish between his different needs, apparently he did not learn to recognize them himself, and continued to seek something to mouth or eat whenever he was in distress. On the other hand, his mother deprived him of a satisfying amount of sucking by her prohibition of mouthing toys and her abrupt removal of the bottle and pacifier. It was at the time when this sucking satisfaction was withdrawn that Joey's pica became prominent.

Joey, like many other children with pica, had mild iron deficiency anemia. Gutelius⁴ and her asso-

* This research project is being conducted by members of the Staff of the Child Development Unit of the Yale Child Study Center. The author is Joey's pediatrician. The project is supported by the Research Division of the United States Children's Bureau, Department of HEW.

ciates, using a small, double-blind study, showed that children with pica had significantly more anemia than controls matched for age, family size, and per capita expenditures for food. Whether iron deficiency leads a child to pica, possibly in an ineffectual search for iron is not clear. Some investigators have reported cessation of pica after administration of iron (Lanzkowski⁵), while others, including Gutelius, have shown no significant difference from the natural course in a control group.

Other factors which Gutelius described in the families of children with pica were more unmarried mothers, more frequent moves, fewer play resources, more children farmed out, poorer homes, and more major economic problems. Millican, et al⁶ described the mothers of children with pica in their study as women who tended to handle the children's anxiety as they handled their own—not by expressing feelings or dealing with problems, but in a passive or regressive way. They also tended to seek oral satisfactions themselves by overeating, taking drugs, or eating clay or starch.

Although all these factors—deprivation, multiple problems, excessive, inappropriate, or inadequate use of sucking, and undernutrition—occur frequently in children with pica, none of these is pathognomonic, and all occur in many children who never show pica. Why pica is chosen as a symptom is not clear. It may be a likely tendency in a child with strong interests in mouthing who does not receive adequate nurturing in some important way from a consistent person and who continues to seek and find his main satisfactions and comfort through mouth activities. Mothers who foster inappropriate sucking, or who have pica themselves, such as those who are habitual clay or starch eaters, promote this tendency.

If the mother is frequently away from the child or too overwhelmed or busy to be aware of his activities, he misses not only her presence, but her guidance about acceptable things to eat and encouragement for other forms of play.

Without intervention, pica tends to continue until 3 to 5 years, and occasionally longer. As long as a child persists in this activity, he is in danger of serious consequences from the things he eats. Since paint chips have a pleasant, slightly sweet taste and often a pretty color, they are especially attractive, and eating them causes lead poisoning. With large or repeated ingestion there is danger of damage to the central nervous system, which may have permanent effects of varying severity on learning and personality development. Kidneys and bone

marrow are also susceptible to large amounts of lead. Other complications of pica are poisoning from other household materials or medicine, parasite infestations, intestinal obstruction, or perforation. The child with pica may also suffer, because of deficits in nurturing, from impaired intellectual development, a personality disturbance, lack of ability to form strong, specific ties to people, and lack of appropriate ways of expressing feelings.

The occurrence of pica is an important call for help from the child, and should be heard as such by those responsible for his care. *Questions about pica should be part of every pediatric history, and every child with a history of pica should be screened for lead intoxication.*

When pica is discovered, coordinated efforts at intervention are indicated to prevent untoward complications and to help the child progress to more mature and appropriate activities. Intervention may include support to the parents, help with problems of housing, finances, or repeated pregnancies, and guidance in understanding the child's developmental needs. If anemia is present, it should be treated. A homemaker or day care center may give important relief to an overwhelmed mother and opportunities for the child to experience affection, consistent direction, and age-appropriate activities from another adult.

In summary, pica is a very complex symptom, related to a child's relationships with his parents and the meaning which is given to sucking and oral activities. It is usually associated with a disturbance in relationship of the child with his mother—a relationship which may be strained by the problems of the mother which interfere with her ability to nurture, or by the particular needs of the child. Pica is rarely seen in infants who receive adequate satisfaction of their emotional needs. The stresses upon the adaptive capacities of the mother and the reality problems of living, imposed by conditions of poverty and discrimination, appear to increase the likelihood that this specific symptom will be found somewhat more frequently among the poor, though it may occur in any child. As indicated earlier, it would be a great mistake to equate inadequate nurturing with socio-economic status. There is need for increased understanding of pica to allow more effective prevention or early intervention.

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Treatment of Lead Poisoning At Yale-New Haven Hospital 1970

Thomas F. Dolan, Jr., M.D., Stephen F. Wang, M.D. and Alan Meyers, M.D.

Children who exhibit symptoms of lead intoxication require immediate treatment. This is most urgent in children who have even mild symptoms of C.N.S. involvement since they are at great risk to develop encephalopathy with subsequent poor prognosis.¹ At blood lead levels of greater than .08 mgm% there is universal agreement for prompt treatment as the risk of developing encephalopathy is great.² At blood lead levels of .06—.08 mgm% children usually do not develop C.N.S. symptoms and controversy exists concerning the treatment of these asymptomatic children.³ They are at risk because seasonal variations, acute infections, and continued ingestion of lead may lead to the development of symptoms.

There have been no follow-up studies of asymptomatic children with elevated blood levels with or without treatment to determine the long range consequences of an increased body burden of lead. Lacking this information the clinician must weigh the expense and toxicity of chemical methods aimed at reducing the body lead stores.

In past years we have observed many asymptomatic children with blood lead levels of .06—.08 mgm% subsequently develop higher blood lead

levels that required hospital admission for treatment. It was elected this spring to treat asymptomatic patients with blood lead of .06—.09 mgm% on an ambulatory basis. The authors feel that treatment with calcium EDTA can be used as a safe and effective method of preventing lead encephalopathy by lowering blood lead levels and total body lead in such patients. There are obvious economic, psychological and social advantages to this form of therapy. It can only be effective, however, when combined with attempts to change the environment so that sources of lead are removed.

The following is a report on the management of all children seen with lead poisoning at the Yale-New Haven Hospital during the first forty weeks of 1970. Because of the increased awareness of the problem of plumbism, the number of cases of lead poisoning has increased. Between 1964 and 1969, there were 16-24 annual admissions for lead poisoning to the Yale-New Haven Hospital. Since then screening programs have been initiated by a neighborhood health center, the City Department of Health, and the Pediatric Ambulatory Service at the Yale-New Haven Hospital.

A total of 115 children was seen at the medical center with lead levels of 0.04 mgm% or greater in the first forty weeks of 1970. Sixty-five had levels between 0.04 to 0.06 mgm%. They received no treatment, but were followed in the clinic. There were fifty children with lead levels of 0.06 mgm% or greater. All of these patients received chelation therapy.

Prior to May 1970 asymptomatic children with blood leads less than 0.08 mgm% were followed in

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the OPD and received no chelation therapy. Children with lead levels greater than 0.08—0.10 mgm% are admitted for chelation therapy with calcium EDTA. Children with levels of 0.10 mgm% or greater were treated with BAL and calcium EDTA. Beginning in May 1970, asymptomatic children with blood lead levels of 0.06 to 0.09 mgm% were treated on an ambulatory basis with calcium EDTA therapy. The dosage used was fifty mgm/kilogram/day in a single daily IM injection for a total of five days. Symptomatic children, or those children with blood lead levels greater than 0.09 mgm% were admitted to the hospital and received either intramuscular calcium EDTA therapy at six hourly intervals for five days or combined BAL-EDTA therapy.

A routine blood count, urinalysis, X-ray of abdomen and long bones were done on all children treated. Prior to the initiation of therapy a blood urea nitrogen and creatinine were obtained. These studies were repeated after chelation therapy. Lumbar punctures were done on all children with blood leads greater than 0.08 mgm% and in other selected cases.

Blood lead determinations were performed at the Yale-New Haven Hospital via the use of atomic absorption.⁴

Results

Table 1 is a summary of the demographic data on the patients studied.

TABLE 1
DEMOGRAPHIC DATA

Race	Black	37
	White	5
	Puerto Rican	8
Sex	Male	30
	Female	20
Age	Average, 23 months	
	Range, 19 mos.-4 11/12 yrs.	
History of pica	43/50	
	21 yes	
Family Intact	27 no	
	2 unknown	
	32 yes	
Family receiving financial assistance	15 no	
	3 unknown	

Patients were identified via a variety of screening programs. (Table 2) Of note is the rather large number of children who were detected because a blood lead was done on the basis of the child's having ingested drugs or other toxins.

TABLE 2
SOURCE OF DETECTION OF PLUMBISM

Pediatric OPD screen	12
Visiting Nurse Association referral	8
Neighborhood health center screen	8
Ingestion of medication or other non-lead toxin	8
Anemia workup	6
City lead screening program	5
Parental request	3

Laboratory findings on these fifty patients with blood leads greater than 0.06 mgm% are shown in Table 3.

TABLE 3
LABORATORY FINDINGS

Peak blood lead .06-.08 mgm%	27	
Peak blood lead .08-.10 mgm%	15	
Peak blood lead .10 mgm% or greater	8	
Anemia	Present	19
	Absent	30
	Not done	1
Lead lines by X-ray	Present	21
	Absent	23
	Not done	6
Radiopaque flecks in G.I. tract	Present	33
	Absent	10
	Not done	7
Spinal fluid analysis	Normal	32
	Not done	18
Urinalysis	Normal	50

A total of thirty-two children received forty-four courses of EDTA therapy on an ambulatory basis. In addition there were twenty-five children admitted for twenty-seven admissions to the hospital for therapy. Of the latter group eighteen received EDTA alone and nine received combined courses of BAL and EDTA. Of note is the fact that these twenty-seven admissions accounted for 234 hospital days.

Follow-up data on the fifty children seen with lead poisoning revealed that eighteen moved to "lead free housing", twenty-two had housing repaired to meet the standards of the city housing code; and ten had no change in housing.

None of these fifty patients had signs, symptoms or laboratory evidence of central nervous system involvement due to plumbism. All were asymptomatic with the exception of constipation and vague abdominal symptomatology which was difficult to document. In all instances chelation therapy lowered the blood lead level an average of 0.02—0.03 mgm% at least temporarily. There was no apparent difference in reduction of blood lead levels

in patients treated on a daily basis versus those treated in the hospital on a six hourly basis. None of the children treated on an ambulatory basis required subsequent hospitalization for plumbism. New or repaired housing was obtained equally for hospitalized and non-hospitalized patients.

Discussion

Since children with blood lead levels of 0.06 to 0.08 mgm% rarely demonstrate central nervous system symptomatology² it would seem reasonable to attempt to prevent levels from rising. Outpatient chelation offers a means of lowering the body burden of lead until such time as the environmental situation can be rectified. The unavailability of safe, low cost housing and the delays due to enforcement of the housing code create problems in providing a better environment. However, despite these factors children in this study have been relocated and the home environment has been improved in 80% of the cases.

Recently Sachs et al⁵ have described their methods of ambulatory treatment of asymptomatic children and concluded this was a safe alternative to hospitalization. Evidence from our study would suggest that calcium EDTA therapy is relatively non-toxic, at least by the parameters studied. No children had abnormal urinary sediments or elevations of BUN or creatinine attributable to therapy. Only one child developed a sterile abscess and this was from a small injection he received while under treatment as an inpatient. The large volume necessary for a single daily dose as given is moderately painful, but addition of 0.2 cc of xylocaine to the solution eases the pain.

The economic advantages from outpatient treatment are obvious. Forty-four courses of outpatient therapy saved at least 220 inpatient hospital days. If the eighteen cases hospitalized and treated with EDTA alone were treated as outpatients, as we would now recommend, a further savings of at least another 100 hospital days would result.

Some of the difficulties of ambulatory treatment were overcome by a regular team consisting of at least two physicians and a registered nurse, who

knew all the patients and who were available at all times, and a careful follow-up system to insure that any patient found to have an elevated lead was seen. A college student was used to visit the homes of all those patients who missed appointments and stress the importance of follow-up. Our compliance rate was 100%; that is all patients whom we felt needed treatment received a full five day course of chelation therapy.

Summary

During the first forty weeks of 1970 a total of fifty children were seen at the Yale-New Haven Hospital with blood lead levels of 0.06 mgm% or greater. All of these children received chelation therapy either as inpatients in the hospital or in the Pediatric Outpatient Department. Chelation therapy was accomplished with calcium EDTA alone in the Outpatient Department or combined with BAL when the blood lead levels were greater than 0.1 mgm%. No evidence of encephalopathy was encountered. This experience with ambulatory treatment suggests that this offers a way of maintaining blood lead levels at a relatively safe level until proper environmental changes can be effected. It further offers obvious psychosocial as well as economic advantages to the child as it resulted in a saving of at least 220 hospital days. Through the cooperation of the city health department and housing authority most of the children were either relocated to safer housing or their home was made less hazardous as regards lead.

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Lead Poisoning in an Inner-City Neighborhood

Paul Harris, B.S., M.D., Alvin H. Novack, B.S., M.D. and Leonard Fichtenbaum, M.S.W., M.P.H.

Introduction

Since Lead Poisoning (Plumbism) in its less severe forms may be asymptomatic and often difficult to diagnose unless suspected, and since in its severe forms (i.e. encephalopathy) it is often misdiagnosed, the true incidence is not known.¹⁻⁴ Plumbism has been described as a disease of University Medical Centers because of the high incidence reported by these institutions which coexist in urban ghettos.⁵ New Haven had the highest reported incidence of lead poisoning (22.5/100,000) in the United States in 1965 because of these factors.⁶

Many investigators^{1,2,4 7-9} have sought to approach the problem of the true incidence and degree of lead poisoning but have been hampered by two considerations:

1. sampling techniques
2. interpretation of "normal" lead levels

It is fairly well agreed that the single most reliable indicator of plumbism is the blood lead level which must be applied as a mass screening technique if the true incidence of this disease is to be appreciated. In New Haven this was attempted by the New Haven Health Department in several inner-city neighborhoods with known substandard, dilapidated housing. The overall results indicated that 17% of the 656 children tested had blood leads of equal to or greater than 40 micrograms per 100 grams of blood.

However, in the Hill Neighborhood alone 36% of 103 children tested had blood lead levels equal to or greater than 40 micrograms per 100 grams of blood.

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Study supported in part by Children to Youth Project No. 651, Children's Bureau HSMHA, DHEW and NIMH Grant No. MH 17136-02.

In an attempt to clarify this point as well as to prevent clinical plumbism in the population of children served by the Hill Health Center, it was assumed that a high prevalence of lead poisoning existed in the Hill Neighborhood. The studies described below are an attempt to study the epidemiology of this disease in a given geographic area as well as to correlate this with certain other pertinent factors such as age, seasonal variation, ethnic group, source of income, level of health care, and health assessment.

Methods

The Hill Health Center is a Children & Youth Project* in New Haven serving the children of the Hill Neighborhood (Census Tracts 2, 3, 4, 5, 6) which began its clinical operation in December of 1968. As part of the comprehensive health care offered to all children under five (5) years of age registered at the Center, it was decided to obtain an initial blood lead determination, regardless of the history of pica, anemia, irritability or other symptoms. The supposition is that *all* children living in dilapidated houses are at risk and therefore should be screened for plumbism.

10 ml. specimens of blood were obtained at the time of the initial health assessment using plastic lead free syringes and disposable lead free needles. They were subjected to analysis at the State Health Department laboratories in Hartford according to a standard dithizone Method.^{11,12} Elevated levels which were obtained were repeated for confirmation and the children in question were managed and treated according to current practices.

In addition, lead levels were obtained in the same manner on children presenting with illness or complaints suggestive of plumbism according to history.

Several other parameters were measured and will be presented here because of their significance. These include:

1. Age measured in months

* Children & Youth Project No. 651.

2. Ethnicity as defined by the terms: Black, Puerto Rican, and White
3. Level of immunization
 - i.e. None = no immunizations
 - Partial = one or more immunizations
 - Complete—3 DPT and 3 polio by age 1 at time of initial assessment or 3 DPT and 2 booster and 4 polio by age 5 at time of health assessment.

This parameter was chosen as a crude measurement of previous health care.

4. Source of income
 - i.e. employed, welfare, and other
5. Seasonal variation as measured by month during which specimen was obtained.

Only the initial blood lead levels are included in these tabulations though subsequent tests may have been higher in individual cases.

Results and Discussion

The first table (Table No. 1) indicates that of the first 269 children screened for their blood lead level, approximately 60% were less than 4 years of age and only 9% were over six years of age. The latter group represent exclusively children who either had a previous history of plumbism or who were older sibs of children with known plumbism.

TABLE 1
COMPARISON BY AGE OF THE NUMBER OF CHILDREN TESTED

Age (yrs.)	Number	Percent
<2	51	19
2	53	20
3	59	22
4	50	19
5	21	8
6	13	5
>6	22	8
Total	269	100

The next table (Table No. 2) shows that 37% of all children tested had blood levels of 40 micrograms per 100 grams of blood or greater. The children under the age of 3 years, however, were found to have a higher frequency of elevated blood lead levels. i.e. 43% of these children had blood lead levels of 40 micrograms or greater of lead per 100 grams of blood.

Table No. 3 shows the seasonal variation of the blood lead levels obtained; namely that the values of the blood lead test are considerably higher during the summer months. This is compatible with

the results of Blanksma et. al. in Chicago⁴ who showed that a similar seasonal variation existed. Thus all screening programs should be adjusted and interpreted accordingly. The significance for an individual child of 0.05 micrograms % in the winter months may well be equivalent to 0.07 micrograms % in the summer.

Of 204 children tested 66% were black, 27% were Puerto Rican and 7% were white (Table No. 4). This merely demonstrates the representative ethnicity of groups living in the Hill Neighbor-

TABLE 2
COMPARISON BY AGE OF BLOOD LEAD LEVEL

Age (yrs.)	Blood Lead Level*					
	<40		40-59		>60	
	(No.)	(%)	(No.)	(%)	(No.)	(%)
≤2	60	58	32	31	12	12
3-6	96	67	37	26	10	7
>6	14	64	6	27	2	9
Total	170	63	75	28	24	9

* In Micrograms Per 100 GMS Blood.

TABLE 3
SEASONAL COMPARISON OF BLOOD LEAD LEVELS OF CHILDREN

Months(s)*	Blood Lead Level**							
	<40		40-59		≥60		Total	
	(No.)	(%)	(No.)	(%)	(No.)	(%)	(No.)	(%)
Dec. ^F -March	12	75	4	25	0	—	16	
April-May	21	81	4	15	1	4	26	
June	32	62	11	21	9	17	52	
July	23	50	18	39	5	11	46	
August	41	53	29	38	7	9	77	
Sept.-Oct.	41	79	9	17	2	4	52	
Total	170	63	75	28	24	9	269	

^F 1968

* 1969

** In Micrograms Per 100 GMS Blood.

TABLE 4
COMPARISON BY ETHNIC GROUP OF INITIAL BLOOD LEAD LEVEL*

Initial Blood Lead Level*	No.	White (%)	Black (%)	Puerto Rican (%)
<40	124	67	56	71
40-49	49	20	25	22
50-59	15	13	9	2
≥60	16	0	9	5
Totals	204	7	66	27

* In Micrograms Per 100 GMS Blood.



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Warnings: Use with discretion during the second and third trimesters of pregnancy and restrict to patients not cured by topical measures. Flagyl (metronidazole) is secreted in the breast milk of nursing mothers. It is not known whether this can be injurious to the newborn.

Precautions: Mild leukopenia has been reported during Flagyl use; total and differential leukocyte counts are recommended before and after treatment with the drug, especially if a second course is necessary. Avoid alcoholic beverages during Flagyl therapy because abdominal cramps, vomiting and flushing may occur. Discontinue Flagyl promptly if abnormal neurologic signs occur. There is no accepted proof that Flagyl is effective against other organisms and it should not be used in the treatment of other conditions. Exacerbation of moniliasis may occur.

Adverse Reactions: Nausea, headache, anorexia, vomiting, diarrhea, epigastric distress, abdominal cramping, constipation, a metallic, sharp and unpleasant taste, furry or sore tongue, glossitis and stomatitis possibly associated with a sudden overgrowth of

Monilia, exacerbation of vaginal moniliasis, an occasional reversible moderate leukopenia, dizziness, vertigo, drowsiness, incoordination and ataxia, numbness or paresthesia of an extremity, fleeting joint pains, confusion, irritability, depression, insomnia, mild erythematous eruptions, "weakness," urticaria, flushing, dryness of the mouth, vagina or vulva, vaginal burning, pruritus, dysuria, cystitis, a sense of pelvic pressure, dyspareunia, fever, polyuria, incontinence, decrease of libido, nasal congestion, proctitis, pyuria and darkened urine have occurred in patients receiving the drug. Patients receiving Flagyl may experience abdominal distress, nausea, vomiting or headache if alcoholic beverages are consumed. The taste of alcoholic beverages may also be modified.

Dosage and Administration: *In the Female.* One 250-mg. tablet orally three times daily for ten days. Courses may be repeated if required in especially stubborn cases; in such patients an interval of four to six weeks between courses and total and differential leukocyte counts before, during and after treatment are recommended. Vaginal inserts of 500 mg. are available for use, particularly in stubborn cases. *When the vaginal inserts are used* one 500-mg. insert is placed high in the vaginal vault each day for ten days and the oral dosage is reduced to two 250-mg. tablets daily during the ten-day course of treatment. Do not use the vaginal inserts as the sole form of therapy. *In the Male.* Prescribe Flagyl only when trichomonads are demonstrated in the urogenital tract, one 250-mg. tablet two times daily for ten days. Flagyl should be taken by both partners over the same ten-day period when it is prescribed for the male in conjunction with the treatment of his female partner.

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References available on request.

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hood—i.e. the people whose children are exposed to this disease by virtue of the fact that they live in a ghetto. It is interesting to note that the highest levels—60 micrograms and above are found only in the Black and Puerto Rican children.

The next table (Table No. 5) separates those children who were tested as part of their routine health assessment from those who were tested either on request or because of a history or symptoms suggestive of plumbism. It must be remembered that our index of suspicion at the Hill Health Center is very high for plumbism and therefore many children were tested who would not have been in the usual private practice of pediatrics. It is important to note that there were no significant differences between the two groups indicating that the problem is prevalent in the Hill Neighborhood. This justifies routine testing of all children under the age of 5 years living under poor housing conditions because the yield is equivalent to that achieved when clinical indications alone are utilized.

TABLE 5

COMPARISON OF INITIAL BLOOD LEAD LEVEL*
TO HEALTH ASSESSMENT

Health Assessment	No.	Initial Blood Lead Level*			
		<40 (%)	40-49 (%)	50-59 (%)	≥60 (%)
Yes	122	61	23	6	10
No	96	59	25	11	4
Total	218	61	24	8	7

* Micrograms Per 100 G MSBlood.

Table No. 6 compares the initial blood level to DPT immunization status of the children tested. Here again the differences among the groups who have had different exposure to existing health care facilities are not striking. This suggests that conventional well child care exposure is not effective

TABLE 6

COMPARISON OF INITIAL BLOOD LEAD LEVEL TO DPT IMMUNIZATION

DPT Immunization	No.	Initial Blood Lead Level*			
		<40 (%)	40-49 (%)	50-59 (%)	≥60 (%)
Complete	138	64	21	9	6
Partial	33	58	27	6	10
None	24	50	29	13	8
Totals	195	62	23	9	7

* Micrograms Per 100 GMS Blood.

in preventing the deleterious effects of a toxic environment.

Table No. 7 correlates the source of income for our families with the initial blood lead level. Here we see that in the toxic range above 50 micrograms there is a two-fold difference between the employed and those on welfare. This trend, if substantiated by further studies, would dramatize the need for day care centers providing adequate supervision and shelter for children of working mothers who live in the confines of an urban slum.

TABLE 7

RELATION OF BLOOD LEAD LEVEL* TO SOURCE OF INCOME^F

Income Source	No.	Initial Blood Lead Level*			
		<40 (%)	40-49 (%)	50-59 (%)	≥60 (%)
Employed	59	69	12	7	12
Welfare	70	60	31	3	6
Other	62	55	24	16	5
Total	191	61	23	8	7

* In Micrograms Per 100 GMS Blood.

^F Chief Family Source of Income.

Our data support the hypothesis that there is indeed a high incidence of clinically detectable plumbism in the Hill Neighborhood and that the technique of mass screening using blood lead determining is feasible. The incidence of this disease is quite variable within the population as a whole but correlates very well with slum housing as a measure of poverty. The true incidence of plumbism in our demographic area is probably even higher than our data support as the utilization of our health center is less complete by the most deprived and disorganized families residing in our area.

But perhaps the most disturbing aspect of this report is the implication that one must make regarding the attitude of our society towards the residents of our inner-city neighborhoods. Lead poisoning does not exist in residential suburbs, but at least 40% of the children living in our man-made slums are subjected to unmeasurable and measurable effects of plumbism by virtue of the fact that they are forced to live in this environment because they are poor, Puerto Rican or Black.

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Comparison of Delta-Aminolevulinic Acid Levels in Urine and Blood Lead Levels for Screening Children for Lead Poisoning

Thomas Murphy, B.A. and Martha L. Lepow, M.D.

A variety of methods have been used to detect increased body burdens of lead in young children and especially to find those children at risk for lead encephalopathy. Two of these methods have been utilized extensively during the past few years for mass screening: the determination of blood lead levels¹ and the measurement of urinary delta-aminolevulinic acid.²

This report presents a review of the literature concerning these two procedures and the results obtained by the authors in a comparative study of the two methods.

Any screening procedure for increased exposure to lead should have statistical validity and an

economical method of analysis. Additionally, it should involve a sample that is easy to collect and store. Although there are several different methods of lead analysis, they all share in common a serious limitation: the requirement of a venipuncture to obtain a blood sample of 2-12 cc.

More recently the measurement of urinary delta-aminolevulinic acid (ALA) has been utilized in screening for increased body burden of lead to circumvent the problem of obtaining samples of venous blood. The rationale for this test is based on the effect of an increased body burden of lead on heme synthesis. By binding sulfhydryl groups, lead causes inhibition of ALA dehydratase, the enzyme which condenses two molecules of ALA to form porphobilinogen. The result of this inhibition is an increase in the quantity of ALA in the blood followed by an increase of ALA in the urine. Selander and co-workers have shown that among industrial workers with symptoms of lead poisoning

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a definite correlation exists between blood lead levels and the quantity of ALA in the urine.³

These same investigators have also shown that blood lead levels decreased faster than ALA excretion among asymptomatic workers with interrupted exposure to a heavily leaded environment.⁴ Thus, the relationship between the two values is not always linear.

Several studies have been carried out in children in which random blood lead levels and urinary ALA levels have been compared. Davis reported that the incidence of negative urinary ALA tests was only 4% when blood lead concentration was higher than 50 $\mu\text{gm}/100\text{ ml}$, the upper limit of normal.² Vincent and Ullman studied 57 children by both methods and found no children with blood lead levels greater than 50 $\mu\text{gm}/100\text{ ml}$ with a negative urinary ALA test.⁵

In contrast with the reports of these investigators are the data of Blanksma⁶ and Hull⁷ and their co-workers. Both groups reported essentially no correlation between the two determinations. In both studies, there was a large number of children with blood lead levels in the range in which chelation therapy would be required who had negative urinary ALA tests. On the other hand, both investigators showed that most subjects with positive urine ALA tests had low blood levels on subsequent testing. Due to conflicting data in the literature, the following study was undertaken to obtain comparative data on the two tests as performed in local laboratories. The study was part of a large screening program using urinary ALA measurement among children in low income areas in Hartford, Connecticut.

Study Population

Seventy-six Spanish-speaking and black children ages 1-4 from "high risk" areas were included. All of these children lived in housing composed of multiple dwelling units built before 1940.

Included were children who were being checked one year after a previous evaluation for increased body burden of lead; children who required a blood lead level determination as a result of a positive ALA test discovered during the screening program; and a few children who were tested during a visit to a sick-child clinic. None of these subjects had symptoms of lead intoxication. Single blood and urine samples were obtained simultaneously. Urine samples were collected in glass bottles with preservative, wrapped to protect them from sunlight, and placed in a cooler. ALA determina-

tions were performed by the Connecticut State Health Department according to the Sun Method⁸ modified by Vincent and Ullman.⁹ Blood samples were obtained with lead-free syringes and frozen in lead-free heparinized tubes until analyzed. All blood lead analyses were carried out by one of the authors using the method of Selander and Cramer¹⁰ modified by F. W. Sunderman, Jr.¹¹ Normal blood lead levels are considered to be less than 50 $\mu\text{gm}/100\text{ ml}$ of whole blood and normal urine ALA concentration less than 0.55 $\text{mgm}/100\text{ ml}$.

Results

The comparison of blood lead and urinary ALA levels on specimens obtained simultaneously is shown in Figure 1. Of the 76 children tested, 48 were found to have normal blood lead levels and normal urinary ALA levels. Eighteen children had elevated ALA levels with normal blood lead levels. Five children had both elevated blood lead and urinary ALA levels and finally, five children had elevated blood lead levels with normal urinary ALA content. Three of the 5 with elevated blood lead levels and negative ALA tests had been found to have had an elevated ALA test 1-4 months previously.

These data indicate an incidence of "false positives" of 78% and an incidence of "false negatives" of 50%.

Discussion

These results paralleled those of Blanksma and Hull. "False negative" results may be caused by one of several factors. In a randomly obtained urine sample, there may be problems of concentration. It would be of considerable interest to determine urinary ALA on each sample of urine excreted during a 24 hour period, since it is likely that there is considerable variation in ALA concentration. Since ALA is labile in light, heat, and in alkaline solution, specimens must be carefully handled. In spite of precautions taken to avoid obvious pitfalls, it is difficult to be entirely certain that some false negative results might not have occurred as a result of improper handling of specimens.

Another disturbing feature was the observation that many children who had had an abnormal ALA test had a normal blood lead level. This led to the development of an hypothesis: that perhaps children with an increased body burden of metabolically active lead stored in tissue may manifest a positive urinary ALA test without an elevated blood

SIMULTANEOUS COMPARISON OF BLOOD LEAD AND URINE ALA TESTS IN 77 SUBJECTS (one to four year olds)

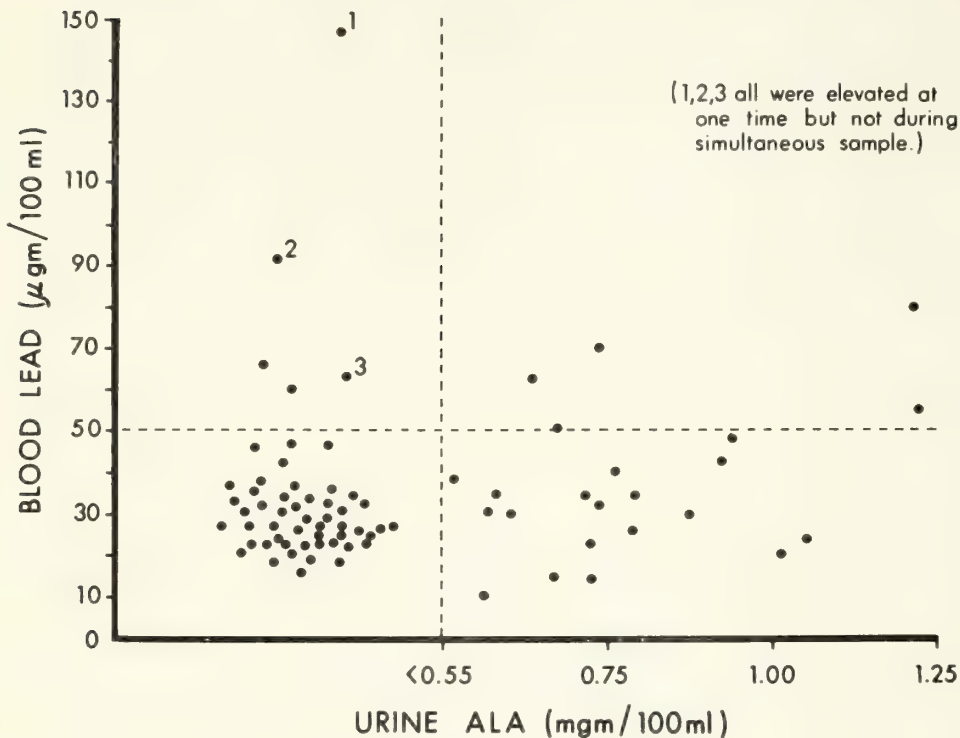


Figure 1

lead level. This postulate is currently being tested by giving challenges with single doses of EDTA according to the method of Whitaker¹² except that the urinary output of lead is monitored over an eight hour period instead of 24 hours.

Data obtained in this manner in three children with positive urinary ALA tests and blood lead levels of less than 40 $\mu\text{gms}/100\text{ ml}$ indicated that two of the three excreted over 990 μgms of lead in eight hours. In accordance with Whitaker's data, these values indicate markedly increased body burdens of lead.

It is not known whether those three children were still eating leaded paint and it is also not known whether these results will be confirmed in a larger study now underway.

Another factor to be considered is the possibility that intermittent ingestion may be the rule rather than the exception among children with pica for paint. If this is the case, results observed in the present study could be compared with results obtained by Cramer and Selander in their studies of industrial workers with intermittent exposure. Although blood lead levels might be low, urinary ALA excretion would continue at abnormal levels. Since the method of ALA determination also meas-

ures aminoacetones, it may be that some of the false positives are due to those substances rather than ALA. As for those children with blood lead levels above 60 $\mu\text{gms}/100\text{ ml}$ and normal urinary ALA, it is possible that the duration of exposure has been very short and very recent.

It is evident that in children, as in industrial workers, the blood lead level and urinary ALA concentration cannot be used interchangeably. Blood lead will be elevated in acute intoxication or in continual chronic ingestion when the tissue capacity for storage is exceeded, whereas ALA may be elevated in chronic and/or intermittent ingestion and possibly for some time after ingestion has ceased. The results of versene challenges suggest that some children with positive urinary ALA tests with normal blood lead levels may have an excessive amount of stored lead in their body tissues. More data are required to confirm this postulate.

Although surveys using random urine samples in which ALA is measured may identify children who have had excessive lead intake, that test alone cannot be depended upon for identifying a child who requires chelation therapy to prevent encephalopathy.

Thus, all such children should have a blood lead determination performed. In order to detect children with blood lead levels of 60 μ gms whose ALA test might be negative, continuous monitoring of blood lead levels must be carried out. Another possible mechanism for discovering that group of children before they become symptomatic would be to measure the inhibition of ALA dehydratase by lead directly in the red cells. This might be done on a small sample of blood. Hernberg¹² reports a close negative correlation between the enzyme levels and blood lead levels. At blood levels of 40 μ gms, the enzyme is 50% inhibited and at blood levels of approximately 70 μ gm/100 ml, the enzyme is 90% inhibited. This places some limitation on the test as a screening device for identifying children who require immediate treatment since the test loses its ability to discriminate varying increments in lead levels from 70-200 μ gm. Nonetheless, if this test were employed for screening purposes, any child with 90% inhibition of enzyme should have a blood lead level determination. Theoretically, the enzyme level should be decreased before there would be an increased concentration of the substrate (ALA) in the blood. Until a micromethod for blood lead determination is forthcoming, measurement of the enzyme might be a valid approach for large scale screening.

Another reason for pursuing the enzyme specifically are the findings of Millar and co-workers who have shown that modest elevations in blood lead in suckling rats results in a reduction in both blood and brain ALA dehydratase activity.¹² Translated to man: if brain dehydratase is inhibited at the same level as blood dehydratase, then children will be "at risk" of incurring central nervous system damage at considerably lower blood lead levels than are now acceptable.

Thus, it might be important to monitor the prevalence of partial inhibition of enzyme to detect individuals who are suffering from increased exposure and establish measures to remove available lead from the environment.

A method for blood lead determinations utilizing atomic absorption spectroscopy but only requiring 10 μ l of whole blood is under development.⁸ Among 78 samples of blood in which lead levels were determined by the micromethod and compared with results obtained by the standard colorimetric method, the correlation coefficient was 0.989. Thus, although it is experimental and requires costly machinery, the micromethod procedure seems to have considerable promise.

Conclusion

The use of urinary ALA content for screening for lead poisoning in children will not identify a significant percentage of children with elevated blood lead levels who may require treatment. In the present investigation, 50% of the children with elevated blood lead levels had normal ALA content in the urine. Of 23 children with a positive ALA test in the urine, 18 had normal blood lead levels. The results obtained among three children with normal blood lead and elevated ALA levels who were given versene challenges seems to suggest that these are not all false positives since two of the three children subsequently showed an abnormal output of lead in the urine. The data suggest a complimentary role for the two tests. Blood lead determination would be more valuable where recent ingestion is suspected or symptoms of lead intoxication are present while ALA would be valuable in those who are suspected of having increased amounts of stored lead. Such an hypothesis suggests that the use of either test *alone* for screening would result in children at one end or the other of a spectrum not being identified. Any child with a positive ALA test must have a blood lead determination.

Obviously, more data is necessary on the group of "false positives" to, in fact, determine whether or not they comprise a clinically significant group of children who require therapy. Any further comment on the merits of ALA versus blood lead must await the collection of such data.

Measurement of ALA dehydratase is valuable for industrial screening and theoretically should have great value in screening for abnormal lead exposure among young children. The micromethod for determination of blood lead levels is attractive: yet more technical development is required before it will have widespread use. At present measurement of Blood Lead is the most reliable screening tool for detection of childhood lead poisoning.

Since this manuscript was submitted for publication, Weissberg, Lipschutz, and Oski have demonstrated that the measurement of delta-aminolevulinic acid dehydratase activity in a small sample of circulating blood cells is a sensitive method of detecting increased lead burden in young children.¹⁶

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Epidemiology of Increased Lead Exposure Among 954 One—Five Year Old Hartford, Connecticut, Children—1970

Mahlon Hale, A. M., LL.B and Martha L. Lepow, M.D.

Introduction

In a 1969 preliminary survey for lead poisoning among 76 small children in the North End of Hartford, 24 (32%) were found to have blood lead levels in excess of 40 micrograms/100 ml. Forty-six had positive histories for pica. These findings suggested that a comprehensive survey was required.

In 1970, 954 children between the ages of one and five were screened in two tracts of sub-standard housing in the North End of Hartford and one in the South End. Ninety-two percent of the residential structures in the North End were built

prior to 1944. The Southern tract contained two public housing projects constructed during the 1940's, in which a few cases of lead poisoning had been reported. The survey was conducted by 17 volunteer high school and college students as a summer work project under the direction of one of the authors (M. H.). For every child found in the survey age group, workers completed a questionnaire designed for data processing analysis. Information was obtained from a parent or grandparent. The purpose of the questionnaire was to determine the predicting value of pica and eating paint.

Laboratory Methods

The screening test employed was the Sun delta-aminolevulinic acid (ALA) method¹ as modified by Vincent and Ullman.²

Random urine samples were usually collected by parents from children at the time of interview.

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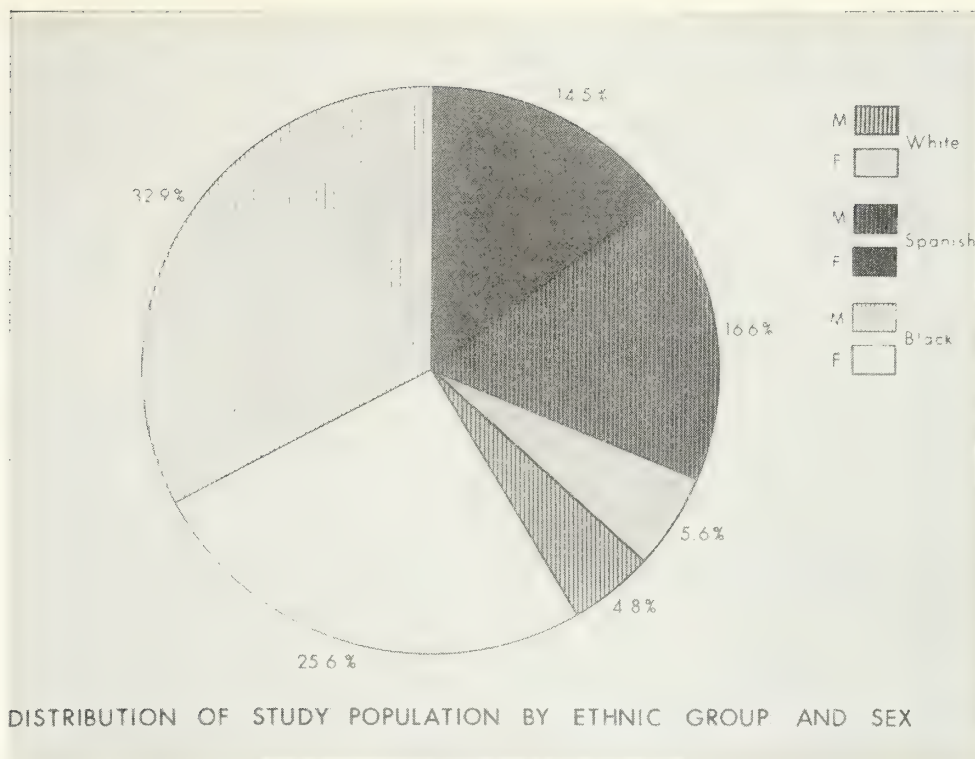


Figure 1

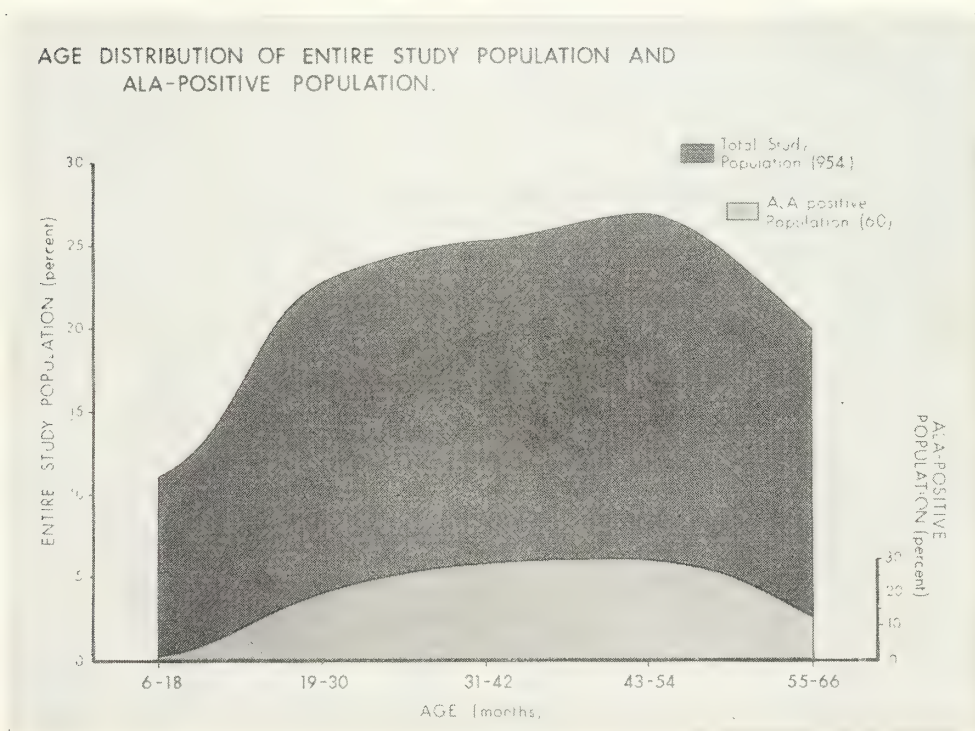


Figure 2

Due to the lability of ALA, specimens were immediately protected from light and refrigerated no later than three hours following collection. ALA determinations were performed in a research laboratory of the Connecticut State Department of Health.

Results in excess of 0.55 milligrams/100 ml (hereafter +ALA), were deemed abnormal and followed up by blood lead tests. The method used for these determinations was that of Selander and Cramer,³ with modification developed by F. W. Sunderman, Jr.⁴ Children with blood lead levels between 40 and 60 micrograms/100 ml were identified for future retesting. Levels between 60 and 80 micrograms/100 ml indicated treatment on an outpatient basis. Children with levels in excess of 80 micrograms/100 ml were hospitalized for treatment. All instances of elevated ALA levels were reported to the Hartford Health Department for inspection of dwelling units.

The statistical analysis employed was Chi square analysis with correction for discontinuity.

Results

The racial and sex distribution of the study population is shown in Figure 1. Fifty-eight percent of the children were black, 30% Spanish speaking and 10% white. The few remaining children belonged to other ethnic groups. Males represented 55% of the population tested. By ethnic group, they represented 56% of the black population, 55% of the Spanish speaking population and 51% of the white population. Of the 954 children tested, 60 were identified with elevated urinary ALA levels. Thirty-nine of these children lived in the North End, 19 in the public housing projects surveyed in the South End, and two others lived in another area on the south side of the city. The age distribution of the +ALA group compared with the age distribution for the study population

is shown in Figure 2. It can be seen that the number of +ALA subjects was proportional to the total population in all age groups.

On the basis of the subsequent blood lead determinations performed on the 60 subjects, 9 children were treated for lead poisoning with chelating drugs. Four of these were hospitalized with blood lead levels between 80 and 147 micrograms; five were treated on an outpatient basis, and four others were identified for future retesting of their blood lead levels.

Table 1 shows the prevalence of the +ALA test in rate/1000 according to age and ethnic group for the total population. The prevalence of the +ALA test among the black children was almost twice that among the Spanish speaking children, 74 compared with 39.* Little difference in the prevalence among black children occurred between the ages of 19 and 54 months. The white population was very small and could not show a meaningful correlation with the two other population groups.

Sex distribution favored males in the +ALA population, who comprised 65% of the group. Black males accounted for 42% of the total +ALA population. No Spanish speaking females were in the +ALA group.

The prevalence of pica in rate/1000 according to age and ethnic group for the total population is shown in Table 2. Again, the prevalence of pica is greater among black children than among Spanish children, but the difference was not significant at the .05 level. For white children, the prevalence of pica was slightly less than with blacks. With the exception of Spanish speaking children between the ages of 43 and 54 months, the prevalence of pica gradually declined from a peak in the youngest age group for all three ethnic groups.

* Statistically significant at the .05 probability level (Chi Square >3.84).

TABLE 1
PREVALENCE OF +ALA TEST AMONG TOTAL POPULATION

Age in months	BLACK			PUERTO RICAN			WHITE		
	# +ALA	# tested	Rate/1000	# +ALA	# tested	Rate/1000	# +ALA	# tested	Rate/1000
12-18	1	68	15	0	31	0	0	9	0
19-30	10	118	85	1	77	13	1	26	38
31-42	11	143	77	3	60	50	3	22	136
43-54	12	151	79	4	79	51	2	30	67
55-60	7	77	91	4	38	79	2	12	167
Total	41	557	74	11	285	39	8	99	81

Table 3 shows the prevalence of pica for paint in rate/1000 for the three ethnic groups. The prevalence was highest among black children and diminished with Spanish speaking children and white children, though the latter group was extremely small. There was a significant difference in the prevalence of pica for paint between the black and Spanish speaking children at the .05 level. For the entire population, the prevalence of pica for paint declined from a peak in the youngest age group similar to the decline of the prevalence of pica. This trend, however, was not uniform in the individual ethnic groups.

Slightly more than half of the children surveyed had flaking paint in their immediate environment; 55% of the black children, 44% of the Spanish speaking and 46% of the white children. In addition, 34% of the population lived in dwellings with holes in the plaster. The prevalence of flaking paint was significantly greater for the +ALA population (significant at .05 level). Sixty-two percent of these children lived in homes with flaking paint, thereby increasing the chances for a positive history for pica for paint.

With the +ALA group, although a history of pica was not a significant factor, a positive history of pica for paint was. Black children, who had a greater chance than Spanish speaking children in having a positive history for both, had a greater chance of having a positive ALA test than the Spanish speaking children (significant at the .05 level).

The collection of paint samples during the survey resulted in 22 instances of lead levels in excess of 1% among 54 samples. The highest lead level was 41%. Seven of these samples were from interiors; the remainder were from accessible exterior surfaces.

Comments

On the basis of the Registry of Births for the City of Hartford, it is estimated that the survey reached about 70% of all children in an area. From out data, we cannot determine whether the children missed were at greater or lesser risk than the population surveyed.

The survey was almost 100% successful in obtaining a specimen and completing a questionnaire on

TABLE 2
PREVALENCE OF PICA AMONG TOTAL POPULATION

Age in months	BLACK			PUERTO RICAN			WHITE		
	# With Pica	Population	Rate/1000	# With Pica	Population	Rate/1000	# With Pica	Population	Rate/1000
12-18	54	68	794	19	31	613	8	9	889
19-30	77	118	653	37	77	481	16	26	615
31-42	80	143	559	17	60	283	11	22	500
43-54	76	151	503	23	79	291	14	30	467
55-60	27	77	351	7	38	184	3	12	250
Total	314	557	564	103	285	361	52	99	525

TABLE 3
PREVALENCE OF PICA FOR PAINT AMONG TOTAL POPULATION

Age in months	# With Pica for Paint	# Subjects	Rate/1000	# With Pica for Paint	# Subjects	Rate/1000	# With Pica for Paint	# Subjects	Rate/1000
12-18	20	68	294	4	31	129	1	9	111
19-30	22	118	186	11	77	143	1	26	38
31-42	20	143	140	6	60	100	3	22	136
43-54	21	151	139	7	79	89	0	30	0
55-60	7	77	91	2	38	53	0	12	0
Total	90	557	162	30	285	105	5	99	50

every child reached, although frequently one or more returns was required in order to obtain the specimen. An experiment with mail-ins was almost 100% unsuccessful.

Data was collected by young and inexperienced observers—17 high school and college students. Some areas of non-compliance were revealed in the completion of questionnaires; parental sensitivity to certain questions probably accounts for much of this.

The rate of +ALA tests for the population studied was 63/1000. The only large survey utilizing the ALA test with which this result may be compared is the Cleveland survey of 1960, reported by Griggs et al.⁵ The ALA test was used there in only one census tract with 571 children, yielding a rate of 40/1000. Those authors abandoned the ALA test in favor of other parameters which in their estimation gave better indication of the prevalence of lead exposure.

When the present screening program was initiated, it was hoped that the test would identify those children with blood lead levels greater than 60 $\mu\text{gm}/100\text{ cc}$ whole blood so that therapy could be initiated. In the present survey this rate was 9.4/1000. These data are comparable with the blood lead findings in Baltimore during the period of 1959-61 as reported by Schucker et al.⁶

In spite of the fact that a prevalence rate for elevated blood lead levels of 9.4/1000 was found in the study population using a positive ALA test as an initial screen, we have no way of determining how many ALA negative children had elevated blood lead levels. The data of Murphy and Lepow⁷ suggest that there is not an optimal correlation and that the two tests may reflect separate metabolic lesions.

Although the questionnaire sought information about a number of factors that might be of predictive value in identifying the child with an increased body burden of lead, only positive histories for pica, pica for paint, and for hazardous dwellings produced significant correlation. Even so, predictive value of these factors remains unclear. For example, screening on the basis of positive histories for pica for paint alone would have produced 35% of the +ALA's. Screening all pica positive children, however, would produce only a 9% rate of +ALA's as compared with a 6% positive rate for the total population screened.

We feel the *major* predisposing factor to chronically increased body burden of lead is habitual exposure to bad housing. Detailed data on all resi-

dences in which a child had lived would be necessary in order to validate this supposition. While it is not known precisely how many children in the inner city have been exposed to lead paint, the age of the majority of residential structures indicates that almost all would contain lead based paint. Histories of eating paint are three times more common for children living in dwellings with flaking paint than for those who were not. Part of this difference reflects parental awareness that children were eating paint chips. Habitual exposure of black children to this kind of housing is far greater than the other ethnic groups.

Spanish speaking children as a group have not had such continuous exposure to this hazard. The prevalence of pica among the indigenous population of Puerto Rico is not known, but we surmise that there will be an increase in positive histories among the Spanish speaking population as it settles permanently into the inner city. Among ethnic groups there were different prevalences for pica, pica for paint, and positive ALA histories; but once children became part of the +ALA group, their characteristics became indistinguishable.

Although determining the prevalence of abnormal exposure to lead was an important incentive for the survey, current usage of lead paint was also investigated. Sampling by our workers was by no means complete, but the finding of 22 positive lead paint samples in 54 instances is some indication of the widespread existence of lead based paint.

It is generally assumed that most of the lead based paint found in housing today was the consequence of work performed some thirty years ago, and the children usually ate old paint from interior surfaces such as window sills. However, our findings did not completely substantiate these views.

Our workers found lead based paints in *current* use in one housing project, outside the so-called lead belt of the inner city. At the same time, they found lead based paint is still commonly used in renovating dwellings in the inner city, thereby preparing the way for a new cycle of lead poisoning. Finally, they found considerable evidence of external uses of lead based paints in areas easily accessible to small children. The identification of a hallway or porch upon which a child played and the discovery of lead paint, often peeling, was commonplace.

The city of Hartford now has an ordinance specifically forbidding the use of lead paint on interiors,⁸ but there is no similar provision for the exteriors of residential structures. Furthermore, the

law has proven difficult to enforce. The State of Connecticut also has a law providing that warnings must be placed on every can of lead paint sold in the state,⁹ but the survey team found warnings conspicuously absent on cans of lead paint in a canvass of seventeen paint stores in Hartford, fifteen of which sold lead based paint.

The survey's findings indicate that neither the local prohibition nor the state warning provision is an adequate safeguard against the use of lead paint in residential dwellings. It is clear that without some drastic change in the laws, society will passively tolerate the continuation of a disease that should have been prevented decades ago. Adequate substitutes for lead based paints already exist. Accordingly, we recommend that the State adopt legislation barring the sale and use of lead based paints for residential structures. An impelling reason behind the need for such legislation is that the Hartford survey represents only a peak of the iceberg. Only one-tenth of the population at risk was reached in the survey, and there are other cities in Connecticut with equally poor housing.

Finally, it should be recognized that identification of clinically ill children is not the same as identifying all those children who are asymptomatic, but who carry within them increased body burdens of lead. The consequences of such additional body burdens are just beginning to be explored, and it may well be that we are dealing with a body poison that is much more subtle in its subclinical manifestations than we have previously imagined.

Summary

In a recent survey of 954 small children for lead poisoning, 60 were found to have increased urinary ALA levels. Nine received treatment for elevated lead levels. Poor housing and pica characterized

over half of the population surveyed. Children with +ALA levels generally lived in poor housing, had a higher prevalence of pica and a higher prevalence of pica for paint than the general population. Black children had a higher prevalence of +ALA tests, histories of pica, and histories of pica for paint than other ethnic groups by their lifetime exposure to poorer housing and its attendant hazards.

Finally, the survey team found extremely widespread sale and use of lead based paint, indicating that the current State and local laws are ineffectual in restricting the use of this paint.

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Lead and The Legislature—1971

Robert G. Oliver, B.A., LL.B.

The primary goal for State Legislators in 1971 will not be to enact entirely new laws, but rather to expedite and facilitate enforcement of existing legislation: not to fill a law-making gap, but to bridge an enforcement gap, to impart a sense of urgency to all those engaged in housing, health and child care work on both the City and State levels.

Today, there is in existence in Connecticut a basic State legislative structure, which, though imperfect, nevertheless, provides the basis for an attack upon many of the causes of lead poisoning. For example, the 1967 General Assembly adopted Public Act 743, which forbids the use of paint containing dangerous amounts of lead and other poisonous metals in interior and accessible exterior surfaces of structures housing three or more families. The same act barred use by any municipality or local housing authority of poisonous paint in any public housing projects and required the State Director of Purchase to promulgate standards for purchase of paint by the State.

Subsequently, in 1969, Public Act 533 required all paint cans sold in Connecticut after January 1, 1970, to contain the following warning label:

'CAUTION—CONTAINS LEAD OR OTHER COMPOUNDS HARMFUL IF SWALLOWED. Do not apply on any interior surfaces of a dwelling or of a place used for the care of children or on window sills, toys, cribs or other furniture which might be chewed by children. Wash thoroughly after handling and before eating or smoking. Close container after each use. KEEP OUT OF REACH OF CHILDREN'

Enforcement of the act was given to the Commissioner of Consumer Protection. He has the power to seize paint packaged, distributed, sold or offered for sale in violation of the act. But an attempt to put meaningful fines into the penalties provisions of both the 1967 and 1969 laws was thwarted by a last minute compromise engineered in the Legislature at the behest of interests sympathetic to the paint retailing industry.

Thus, on the books today, it is illegal to sell paint with hazardous concentrations of lead unless prominent warning labels are on the cans; it is illegal to use lead paints in the interiors of any public housing projects; it is illegal to use such paint in apartment houses of three or more units; and the State has restricted its purchases of lead paints to a few intense colors apparently requiring lead salts. Yet, the menace of lead poisoning has not been conquered.

In part, the 1971 legislative package drawn up by the Governor's Lead Task Force, upon which I was privileged to serve, is directed to further the enforcement of this existing legislative framework. In part, the proposed bills attempt to attack the underlying causes of lead poisoning, the coats of lead paints in our existing housing stock accumulated over many decades of neglect.

Thus, one bill will require each doctor, hospital or laboratory to report within 48 hours to the State Commissioner of Health and to the local Health Director, the name and address of "each person found or suspected to have a level of lead in the blood equal to or greater than .04 milligrams per 100 grams of blood or any other abnormal body burden of lead." This bill gives immunity to the doctor or institution so reporting. Most important, the bill requires the local Director of Health to "make or cause to be made an epidemiological investigation of the source of the lead" and to report the investigation to the local building official who "shall thereupon require such action to be taken . . . as may be necessary to prevent further exposure", including relocation of the family. Within 30 days, the local Health Director must report to the Commissioner on his investigation and the actions taken.

This bill, if enacted, can provide the state-wide statistics necessary for understanding the full impact of lead poisoning. But, most of all, it will put the public spotlight upon those municipalities which do little or nothing in the face of lead poisoning cases by giving concerned local doctors, community groups and politicians hard data. For health directors in such towns will have been required to report to the Commissioner that they simply did nothing to investigate the source of lead

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poisoning or to prevent further exposure if such were the case.

A second bill aiming at facilitated enforcement of existing legislation is one calling for a \$40,000 appropriation to the State Health Department to increase staff and laboratory facilities for performing lead screening and diagnostic tests and studying new methods of lead level detection and related matters. Another such bill would create a nine member watchdog Citizens Advisory Committee on Lead Poisoning to study the operation and enforcement of statutory and housing code provisions, to review reported incidents of lead poisoning and to make recommendations to State and local health departments and to the General Assembly. This latter proposal would, in effect, continue the work of the Governor's Lead Task Force during the next two years.

A fourth measure to assist operation of the existing legislative machinery calls for creation of housing divisions in the Circuit Courts "where needed in Circuits serving urban areas . . . with especially assigned judges and prosecutors with jurisdiction over (1) housing code violation prosecution; (2) summary process action; (3) actions under the Tenant's Representative Act and (4) applications by the Commission on Human Rights for injunctions in housing discrimination cases." The Task Force felt it essential that these provisions be included in any court reorganization legislation that may emerge from the 1971 General Assembly.

Recognizing the need to break radically the cruel circle of poverty and bad housing that characterize lead poisoning incidents, the Task Force proposes a new grant program for State Aid to municipalities (1) to assist them in developing and executing local programs to detect and treat incidents of lead poisoning; and (2) to assist them in developing and executing programs to identify high risk neighborhoods and eliminate the hazards. This bill would assist those localities interested enough to apply by paying up to 75% of the proposed local program costs. The State Health Commissioner would have discretion to allocate the grants according to the dual thrust of the bill—detection and treatment; identification, rehabilitation and preventive maintenance of high risk leaded housing. The Task Force is requesting \$500,000 for the biennium for these grants, cognizant of Connecticut's fiscal woes but even more concerned that, without funding and the sense of urgency at the local level that such funds can sustain, more

years will pass marked only by more deaths and illnesses among the very children who are most deprived of the amenities and benefits of life in Connecticut's cities.

Another bill aimed at the existing housing stock is an act to enable municipalities to adopt local certificate of occupancy ordinances. Such a local ordinance would apply to any tenement house (three or more units), and deny landlords collection of rent for any period an apartment is occupied, after a vacancy and before a certificate of occupancy has been issued. The certificate would not issue unless the apartment conformed to local housing codes and contained no paint on accessible surfaces with poisonous lead concentrations.

A third such bill would amend existing statutes such as the Fair Rent Commission Law, Tenants Representative Law and the Covenant of Habitability Act to recognize toxic lead base paints as a public health danger and nuisance within the meaning of those housing laws and to give access to relief under their provisions to the tenants affected.

The latter two bills point up a dilemma: to the extent that certificates of occupancy are required and housing codes rigorously enforced, housing is eliminated from the market, rents driven up and overcrowding intensified in the urban core. On the other hand, when housing codes are not enforced, more units may be available but lead poisoning cases multiply. For this reason the Task Force strongly endorsed legislation to accelerate development of new housing throughout the State at rents low and moderate income families can afford. In the words of the Housing Subcommittee Report:

"There is a critical need for new low income housing in the State. . . . we cannot eliminate slums unless we construct new housing for low income groups and demolish old housing as soon as it has been vacated. We therefore strongly recommend that legislation be enacted to provide all communities with adequate funding for the construction of new low income housing."

At the same time the Task Force recommended adoption of a state-wide housing code with mandatory minimum standards for all municipalities, modeled after the 1969 American Public Health Association—United States Public Health Service Model Code, but with appropriate reference to the hazards of lead base paints. In this way all 169 Connecticut towns would be required to protect

against dangerous peeling, flaking lead base paints in dwellings.

These nine legislative topics were not intended by the Task Force to represent an exhaustive list of possible legislation. Nor would enactment of the suggested bills be a panacea. The hard work must be done at the local enforcement level if the scourge of lead poisoning in young children is ever to be overcome.

Other measures, although not specifically endorsed by the Governor's Lead Task Force, which could be helpful in the fight against lead poisoning, include enactment of a Child Protection and Toy Safety Act for Connecticut, restoration of appropriate fines for violations of Public Acts 533 and 743 (the 1969 and 1967 Lead Paint Statutes) and adequate appropriations for the Connecticut Research Commission. Thus, the former could give the Commissioner of Consumer Protection power to ban from intrastate sales in Connecticut toys and household substances so hazardous that warning labels alone are not sufficient safeguards; such a Child Protection and Toy Safety Act should encompass toys and household substances painted with poisonous lead base paints. Of course, restoration of appropriate penalties for violation of the existing Lead Paint Statutes would facilitate enforcement of those acts. And adequate appropriations at the disposal of the Connecticut Research Commission for grant allocations would enable re-

search grants to be made to those engaged in research in the field of lead poisoning—should timely application be made.

Finally, dealing sensibly with the childhood disease of lead poisoning points up the imperative need to rationalize the delivery of health care services in Connecticut. The 1971 session will face the continuing dramatic rise in hospital and medical costs. Hopefully, one of the means not only for combating these steeply rising costs, but also for providing adequate health care for the kinds of families in which lead poisoning takes a toll would be the encouragement of community group health plans and centers.

Ultimately, the threat of lead poisoning will remain with us in Connecticut until our constricted and unbalanced housing market is opened up. Until the suburban noose around the center cities is broken, until there is freedom of access to decent housing for all families at reasonable costs, poor families with young children will continue to live in core cities in dilapidated housing surrounded by hazardous concentration of lead lurking in peeling, flaking paint on walls and window sills, doors and railings. This basic and tragic malady the 1971 session of the Connecticut General Assembly will doubtless not solve. Perhaps, with the support of the medical profession and others engaged in health and housing, a real start can be made.

FROM THE PAMPHLET SHELF

POISON PLANT RASHES—Prepared by Naomi M. Kanof, M.D. for the AMA Committee on Cutaneous Health and Cosmetics, this pamphlet describes the various plants which cause poison ivy dermatitis and methods for treatment and prevention of this most universally encountered skin disease in this country.

A separate section discusses the possible steps in plant eradication. This information is reprinted from a U.S. Department of Agriculture publication.

Sample copies available from Leonard R. Tomat, Assistant Executive Director for Educational and Scientific Activities, Connecticut State Medical Society, 160 St. Ronan Street, New Haven.

COVER UP! Prepared by the American Cancer Society, this little folder colorfully and effectively points out the dangers of over-exposure to the sun. A supply of these folders may be obtained from the Connecticut Division of the American Cancer Society. Local area units are likely to have this pamphlet available.

Connecticut Medicine

Editorials

Words And Deeds: Administration Funding For Health

In President Nixon's Health message to Congress, February 18, 1971, he said "If more of our resources were invested in preventing sickness and accidents fewer would have to be spent in costly cures. If we gave more attention to treating illness in its early stages then we would be less troubled by acute disease. In short, we should build a true health system—not a sickness system alone." But what has the administration's record really been? It has not requested funds for the prevention of lead-based paint poisoning. It has not requested funds for the Emergency Health Personnel Act to place physicians in areas where they are scarce. It has not requested funds for aid for vaccinations.

All this has happened even though the PHS has called attention to an outbreak of diphtheria a large measles epidemic and the possibility of a polio epidemic this summer. Legislative history of all these three programs is similar. In each case Congress enacted the measure and authorized the money. All three were then ignored in the administration budget for fiscal year 1971. Prodded by the Health Employees for Change of HEW the administration has asked for money for all these three programs in 1972. However, the low levels of money requested and the delays

on the requests still leave serious questions about the administration's health priorities in spite of Nixon's brave words.

Cancer affects all socioeconomic groups. Lead poisoning, however, is different. It is curable and preventable. It is an exclusive disease of urban slums. The victims are children from 1 to 6 years old who ingest lead paint or plaster that crumbles off the inside walls of old dilapidated houses or apartments. A recent HEW report estimates that lead affects 400,000 children annually and causes 200 deaths. Sixteen thousand require treatment and 3,200 incur brain damage to require permanent custodial care. Lead poisoning thus kills and cripples more children than did polio before the advent of the Salk vaccine. The cost to society is enormous.

Treatment involves identifying the children with high levels of lead in the blood and treating them with chelating agents. Most important is eliminating the lead-based paint from the child's environment. Total eradication of the disease can be achieved, but it would mean renovating some 7 million units of dilapidated urban housing that are painted with lead-based paint. In other words, it's purely a question of money. The Lead-Based Paint Poisoning Prevention Act authorized 30 million for a 2 year program of grants to U.S. cities for prevention programs and a survey of the full extent of the problem

THE COVER

LITTLE GIRL CHEWING WINDOWSILL

The little girl standing at the windowsill looking out and nibbling at the surface tells the story of pediatric lead poisoning. Many children chew on such surfaces. Most children will mouth non-foods—and some persist in this habit for many years.

Old homes frequently have both indoor and outdoor surfaces with many layers of lead based paint accessible to young children. Although there are public health regulations against it, lead paint is still being used for indoor renovations. Lead paint *must* be eradicated from residential structures.

Pediatric lead poisoning *can* be eliminated!

and research into more efficient means for removal of old paint. However, the President's health message and the 1971 budget did not mention lead poisoning. Finally, after some prodding by Representative Ryan of New York and some others, HEW announced that they would amend the 1972 budget to include 2 million for lead poisoning prevention. Even so, the question remains whether the Administration would spend this pitiful sum. Congressman Ryan stated "the failure of the administration to adequately fund this program reflects a complete disregard for the lives of thousands of children in this country."

Another bill that was passed by Congress signed by the President and then left unfunded was the Emergency Health Personnel Act. The law expands the PHS to allow young doctors and other health personnel to practice medicine in rural inner city and other areas short of medical services as an alternative to military service. Congress allowed 10 million for the act in 1971 and 20 million in 1972. The administration, however, bypassed 1971 and has asked for 10 million in 1972.

In 1962 Congress passed the Vaccination Assistance Act. Using funds provided by that act, local authorities have immunized millions of children against a variety of diseases, including measles, diphtheria, and polio. The act expired in 1969, and without funds, levels of immunized children have fallen steadily. The 1970 Immunization Survey conducted by the Bureau of the Census and the Center for Disease Control (CDC) showed that immune levels of children vaccinated against measles had fallen to 57.2 percent national and 41.1 percent in poverty areas. The figures for polio were 65.9 nationally and 50.9 percent in poverty areas.

One result of this drop in the numbers of immunized children has been a measles epidemic. Several outbreaks of diphtheria have occurred this year. The reason is money, according to Phil Sandrigan of CDC's immunization branch. As for polio, the number of cases has not yet started to rise. But polio is a summer disease. The immunization levels have fallen so low that we could have some polio outbreaks particularly in the central cities.

Congress passed the Communicable Disease Amendment in October 1970, as a possible relief for the financial difficulties. The amendment authorized 75 million in fiscal 1971 and 90 million

in fiscal 1972. Except for 2 million for the tuberculosis program in the 1971 budget the administration ignored these programs in its budget requests. Part of the administration's refusal to fund these programs stems from a policy of channeling assistance into comprehensive programs that allow the cities and states more latitude in spending the money. But there is no money to spend and what little there is available was restricted by a decision by HEW to pay for vaccination only against German Measles. There is danger ahead if in the future more money is not appropriated for vaccines.

The critics of the present administration use the three instances mentioned above, lead poisoning prevention, health personnel in rural areas, and vaccinations as evidence of a schizophrenic personality in government. The President speaks eloquently about preventing illness, the administration appears to have more important priorities than health.—L.H.N.

Reference

Bazell, R. J.: Health Programs: Slum Children Suffer Because Of Low Funding. *Science* 172, 921, May 28, 1971.

Further Experiences in Heart Surgery

It is now apparent that angina of effort is not an early symptom, nor is it a true index of the stage of coronary heart disease (CHD). The unreliability of the symptom is the 24 percent incidence reported of sudden death as the first manifestation of CHD. What then are the indications for selecting those patients for investigation to determine which may be recommended for surgical cure? What should we recommend to a patient with clinical evidence of CHD but no significant disability? Should the patient with angina undergo special investigation for surgery? Should a patient be investigated who has suffered an infarct and is back to work without significant disability? Should we investigate individuals with a serious family history of CHD with a view of prophylactic surgery?

Bigelow suggests first, that disabling angina should be studied by coronary arteriography. So should angina without disablement but whose ECG after exercise produces an ischemic pattern, in patients who have had an infarct with no angina whose ECG changes with exercise, and in a patient who has had one or more infarcts.

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nary bladder atony. Prolonged use of barbiturates may be habit-forming.

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The Vineberg procedure of implanting one or two internal mammary arteries into the anterior and posterior ventricular surfaces has been vindicated. If the patient has 75 percent or more narrowing in one or more coronary arteries the operation is advised. It would be unsuitable if the contractility was poor and if the patient has angina and cardiac failure. When performed in the appropriate patient the mortality rate is very low, 3.4 percent for a single and 5.2 percent for a double implant. The fatal cases had triple coronary artery disease, high end diastolic pressure, poor contractility or a recent infarct. The striking feature was the dramatic improvement but only after 3-5 months post-operative. Eighty percent of grafts became and remained functional.

In the last three years a new and dramatically successful operation has become available for patients with major coronary artery obstructions. But distal to the obstruction there must be a sufficient length of patent artery to allow insertion and function of an aorto-coronary artery vein graft. A relatively standard and safe procedure has been evolved incorporating a heart lung pump to ensure safety. Intermittent aortic occlusion is used and the heart is fibrillated electrically to ensure accurate suturity. Of course, if a suitable grafting site is not available then internal mammary artery implant may be planned.

At the Toronto General Hospital single and multiple grafts were performed on 43 patients. One patient did not survive. The patency rate after operation was 90 percent and the clinical improvement correlated well with the patency rate. Unlike the effect of the mammary implant the patient is suddenly and dramatically improved. But, of course, there is as yet no large term follow up, and there remains concern about the discrepancy in size between the graft and the artery.

Indications for implant or bypass or a combined procedure will have to evolve as experience increases. Most important in bypass is that there must be an adequate distal run-off. However, the anxiety remains about the long term results of bypass grafting. The concept of having two new arteries implanted is more appealing in a young patient with a diseased rapidly occluding arterial system. Perhaps a combined procedure might be best in the young age group.

Surgery is also being considered to resect an

acutely infarcted area of muscle, which might be life saving as it is feasible. But enough experience in this area is not available. Emergency aorta coronary by-pass graft might be a more valuable surgical approach. Cases are being reported in a state of irreversible coronary shock for whom circulatory support was instituted using partial by-pass or aortic balloon techniques. It is possible that a more liberal use of coronary angiograms and ventriculograms in cases of myocardial infarction with heart failure may identify those whom infarctectomy or emergency aorto coronary shunt will benefit. The success of surgery for the acute infarct will depend on the degree of expertness of the team in providing temporary circulatory support. Adequate circulatory assistance is necessary to maintain life while proper radiological investigation and preparation for surgery is carried out. There is a new field for surgery waiting to be developed and it may prove to be extremely gratifying.

As far as pacemakers are concerned, at the present time the intravenous model is the one of choice. The advantage of ease of insertion in all age groups and stages of infirmity offsets the problems of increasing threshold and catheter displacement. Only rarely will the veins clamp down on the catheter and prevent its passage into the cavity of the heart. In such an instance the electrode must be sewed to the epicardium. Pacemaker clinics ensure regular controlled follow up. At the Toronto General Hospital last year 160 new pacemakers were inserted and they required necessary battery replacements. With this great load there is a moral responsibility to manage these patients in such a way that dangerous emergencies due to battery failure do not occur.

There is a small but satisfying series of ventricular aneurysms reported. There was one death during a follow up period of 5 years. Small aneurysms with no symptoms, no elevation of end diastolic pressure, and a coronary tree that does not call for a revascularization procedure are treated conservatively. We will know more about this subject when we receive the results of a life history study which is being conducted on a group of such patients who have not had surgical intervention.—L.H.N.

Reference

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Infection From Indwelling Catheters— A Disease Of Good Medicine

Many previous studies have demonstrated that local infection and sepsis are significant complications associated with the use of polyethylene intravenous catheters. Some catheter colonization rates have been as high as 31-45 per cent. Fuchs¹ study was done under more exacting conditions with regard to catheter placement and careful observation periodically for infiltration and phlebitis. He cultured 500 of 613 catheters. Nineteen of the 500 catheter tips cultured yielded microbial growth. In 18 there was no evidence of local or systemic infection. The other one was associated with systemic infection.

The increase in colonization rate paralleled in roughly linear fashion the increase in duration of catheterization so that "per day" risk was not significantly affected by the duration. Obviously, the longer a catheter was in place the greater chance for colonization so also was the risk higher among the more seriously ill patients than among elective surgery patients. Approximately one half of the catheters had to be discontinued because of various complications whereas the remainder because they were no longer needed. As would be expected, the catheters with complications showed a much higher frequency of colonization. A variety of organisms were cultured but the only systemic infection was caused by *E. coli*.

Phlebitis was the reason for discontinuing 99 of the 500 catheterizations of which 5 were colonized. Fourteen of the remaining 401 were colonized. Clearly about 20 per cent of all catheterizations are complicated by phlebitis. This points up the importance of close observation and need for frequent changes of the vein to avoid this complication. As regards colonization, many factors were thought by Fuchs to be significant in accounting for the low catheter colonization rate that occurred in his study. The basic illness of the patient is a factor in causing predisposition to catheter colonization since the rates were higher in patients in intensive care units and on medical floors than in elective surgery patients.

The care that indwelling intravenous catheters receive in the two settings is different. In the large city and university hospitals catheter care usually falls to the house staff or subintern who exhibit a broad range of skill and interest in

their task as well as an awareness of the factors leading to complications. In Fuchs' hospital most catheter insertions and all catheter maintenance are managed by specially trained "IV" nurses under the IV team system frequent observation of the catheter site, with the earliest possible detection of catheter dysfunction or phlebitis. In such developments immediate removal of the catheter is important in maintaining a low catheter colonization rate.

The importance of these procedures is suggested by his finding that phlebitis and other catheter complications may cause predisposition to catheter colonization. Corso, et al² suggested that this strict maintenance protocol was a major factor in their low infection rate. This low infection rate is attributable to low colonization rate and consequently the same factors affecting colonization rate apply also to the infection rate.

That the incidence of catheter colonization is directly related to the duration of catheterization has been previously and amply documented by others as well as in Fuchs' study. Analysis of his data indicates that the colonization rate increases roughly in a linear scale with the number of days that the catheter is in place. Thus prolonging the catheterization in a single vein subjects the patient to a definite increased risk of colonization and infection.—L.H.N.

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2. Corso, J. A., et al: Maintenance of Venous Polyethylene Catheters to Reduce Risk of Infection. *JAMA*, 210, 2075, 1969.

Lactose Intolerance In Adults

Not "all people need milk" as the ad on buses tells us. Racial and cultural groups differ greatly in their ability to benefit nutritionally from certain foods, in particular milk and its products that contain lactose. All normal mammalian infants possess the ability to metabolize lactose in their mother's milk. The lone exception is the California sea lion which has no lactose in its milk and whose pups are lactase deficient.

Assimilation of lactose is made possible by the presence in the small intestine of the digestive enzyme lactase which converts lactose a non-absorbable, into glucose and galactose, both absorbable. In most mammalian infants sufficient lactose levels are maintained only throughout

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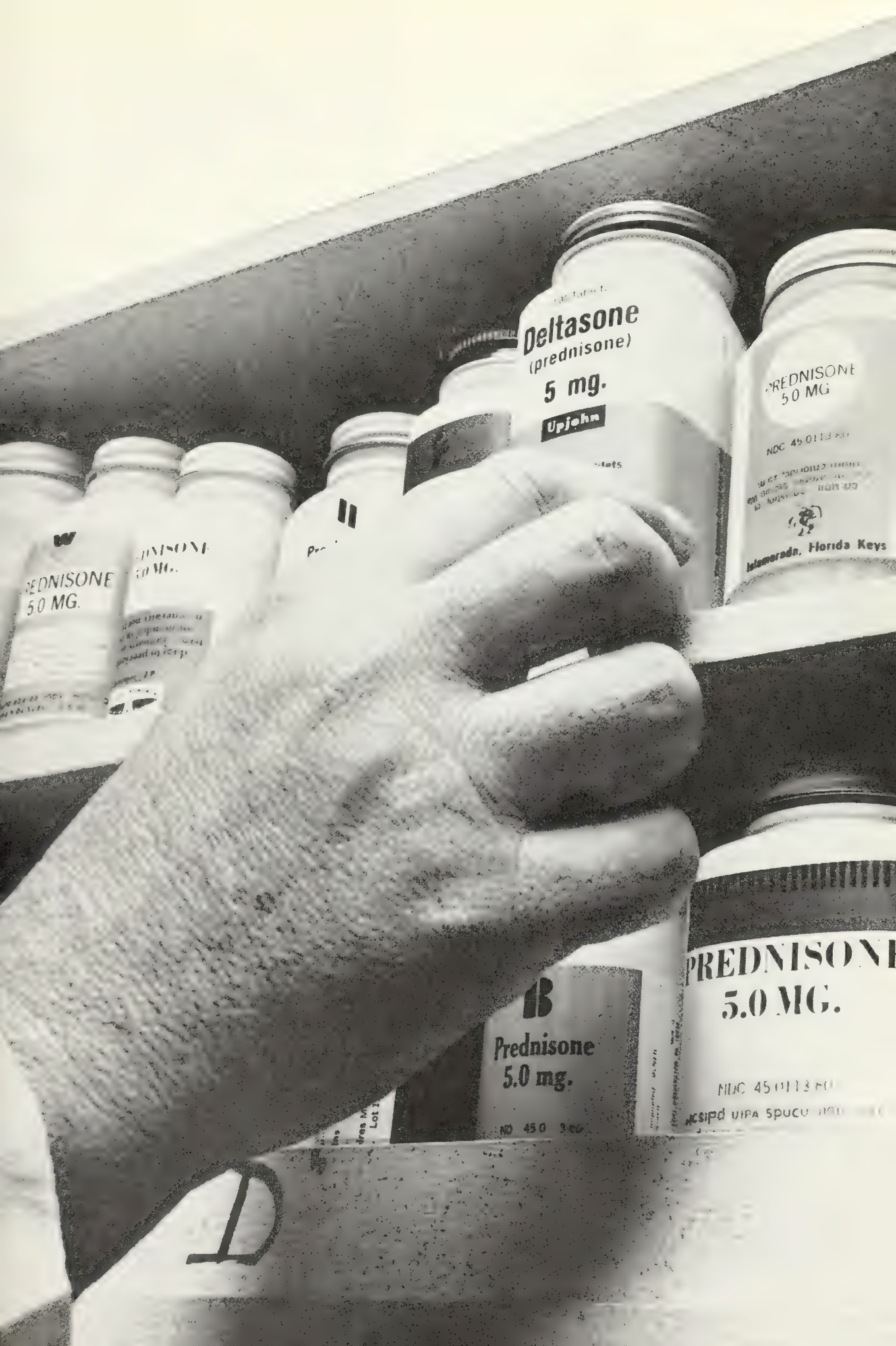
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Indications are the same as those for other anti-inflammatory steroids. Representative uses include collagen diseases, allergic diseases, generalized dermatoses, acute ocular inflammatory disease, certain lymphatic neoplastic diseases, ulcerative colitis and nephrosis. *Important:* Prednisone, like cortisone, is a potent therapeutic agent influencing the biochemical behavior of most, if not all, tissues of the body. Because it manifests little sodium-retaining activity, the usual early sign of cortisone overdosage (i.e., increase in body weight due to fluid retention) is not a reliable index. Hence, recommended dose levels should not be exceeded, and all patients should be under close medical supervision. All precautions pertinent to the use of cortisone apply to Deltasone (prednisone).

Contraindications: As for all other corticoids. *Considered Absolute*—herpes simplex keratitis, acute psychoses and latent, healed or active tuberculosis. May be lifesaving in certain cases of pulmonary or meningeal tuberculosis, but should be used only in conjunction with adequate and effective antituberculous therapy to which causative organisms are shown to be sensitive. *Considered Relative*—active or latent peptic ulcer, Cushing's syndrome, diverticulitis, fresh intestinal anastomoses, osteoporosis, renal insufficiency, thromboembolic tendencies, psychotic tendencies, diabetes mellitus, hypertension, local or systemic infections including vaccinia, varicella and other exanthematous diseases, and fungal infections, and, pregnancy particularly during the first trimester because of observation of fetal anomalies in experimental animals. If necessary to give corticosteroids during pregnancy, watch newborn infants closely for signs of hypoadrenalism and institute appropriate therapy if signs appear.

If corticoids are used in the above conditions, weigh risks against benefits.

Precautions: Deltasone should be given only with full knowledge of characteristic activity of and varied responses to corticoids. Because of inhibiting effect on fibroplasia, corticoids may mask signs of and enhance spread of infection; hence, watch patients closely, and if intercurrent infection occurs, control with appropriate antibacterial measures. If possible, avoid abrupt cessation of corticosteroid therapy because of the danger of superimposing adrenocorticoid insufficiency on the infectious process. Prolonged hormone therapy usually causes a reduction in the activity and size of the adrenal cortex. When discontinuing therapy, relative adrenocortical insufficiency may be avoided by gradual reduction of dose. However, a potentially critical degree of insufficiency may persist asymptotically for some time even after gradual discontinuation of adrenocortical steroids. Therefore, if a patient is subjected to significant stress, such as surgery, trauma, or severe illness while being treated, or within one year (occasionally up to two years) after treatment has been terminated, hormone therapy should be augmented or reinstituted and continued for the duration of the stress and immediately following it. Since mineralocorticoid secretion may be impaired, salt and/or desoxycorticosterone should be administered conjunctively. It is preferable to use a soluble hormone preparation in the immediate preoperative and postoperative periods.

Although unlikely with Deltasone, average and large doses of corticosteroids can cause elevation of blood pressure, salt and water retention and increased potassium and calcium excretion. Dietary salt restriction and potassium supplementation may be necessary. Glucocorticoid steroids may aggravate diabetes mellitus so that higher insulin dosage may become necessary or manifestations of latent diabetes mellitus may be precipitated. Corticosteroids may aggravate myasthenic symptoms in myasthenia gravis and should be given with proper precautions.

Muscle weakness, in some instances, attributed to hypopotassemia, has been reported following prolonged systemically administered corticoids. Excessive potassium loss, like excessive sodium retention, is not likely to be induced with effective main-

tenance doses of Deltasone (prednisone), however, keep this effect in mind and perform periodic serum potassium determinations in patients on prolonged corticoid therapy. Muscle weakness occurring with normal serum potassium levels may be due to disturbance in muscle metabolism. Severe myopathy is associated with substantial doses of steroids for prolonged periods, and evidence indicates it occurs more frequently with 9-alpha-fluoro steroids. Replacement with non-fluorinated steroid has, in some instances, resulted in improvement.

Retardation of linear growth, roughly proportional to dose, has been noted in children on corticoids for six months or more. Following cessation of therapy, growth rate may be accelerated. Therefore, carefully observe growth of children on prolonged corticoid and if growth is retarded, reduce dose sufficiently to permit recovery before epiphyseal closure. Make every effort to avoid corticoids during pregnancy, since spontaneous remission of some diseases such as rheumatoid arthritis may occur. Long term corticoid therapy may evoke hyperacidity or peptic ulcer, therefore, as prophylaxis, an ulcer regimen and antacid are highly recommended. Take X-rays in peptic ulcer patients complaining of gastric distress, and, whether or not changes are noted, an ulcer regimen is recommended. Since prednisone causes less salt and water retention than many other glucocorticoids, patients should be observed closely for development of undesirable hormonal effects that are less obvious indications of steroid toxicity than edema and hypertension due to salt and water retention. Continued supervision of patients after cessation of therapy is essential, since there may be a sudden reappearance of severe disease manifestation.

Adverse Reactions: Adverse reactions associated with use of corticoids include: Cushing's syndrome, moon facies, supraclavicular fat pads, hirsutism, striae and acne; relative adrenocortical insufficiency particularly in time of stress due to trauma, surgery or severe illness; protein catabolism with negative nitrogen balance; electrolyte imbalance; alteration of glucose metabolism with aggravation of diabetes mellitus including hyperglycemia and glycosuria; osteoporosis reversible only with difficulty; spontaneous fractures; aseptic necrosis of the hip and humerus; activation and complication of peptic ulcer including perforation and hemorrhage; aggravation or masking of infection; increased blood pressure; convulsions; petechiae and purpura; menstrual irregularities including amenorrhea, spotting or prolonged bleeding; insomnia; psychic disturbances especially abnormal euphoria; nervousness; posterior subcapsular cataracts occasionally requiring extraction; increased intraocular tension; increased intracranial pressure with papilledema (pseudotumor cerebri); pancreatitis; necrotizing angitis; thinning of scalp hair; suppression of growth in children; thromboembolic complications; facial erythema; allergic skin reactions; ulcerative esophagitis; sweating; vertigo; weakness; myopathy; headache; exophthalmos. Adverse reactions are usually reversible and usually disappear when drug is discontinued.

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the period of high infant maternal dependency. The intestinal lactose then declines rapidly at about the time of weaning. Thus the adults of the subhuman mammals are lactase deficient and lactose intolerant.

Ingestion of lactose by such animals results in unhydrolyzed lactose remaining unabsorbed in the lumen of the intestine, becoming fermented, acting as a hydrophile, causing bowel distention with accompanying symptoms including cramps, gas, and diarrhea.

In man the picture is more complex. Lactase production begins during the third month of gestation and in some races levels remain constantly high throughout life. In others, lactase levels decline to the point of deficiency at some point during infancy and childhood. The populations in which a majority of adults are lactase deficient are now known. African Negroes and their descendents in America, Australian Aborigines, Chinese, American Indians, Eskimos, New Guinea natives, Filipinos and Thais. Thus far the only populations which have consistently exhibited low rates of adult lactase deficiency are European whites and their descendants and Nilotic Negroes of East Africa.

Numerous investigations have reported instances where undiagnosed lactase deficient individuals who consumed large quantities of lactose foods with continued ill effects for years and have experienced immediate and complete recovery upon abstinence from such foods. In addition it is common for lactase deficient individuals to report family histories of milk intolerance. It would seem then that adult lactase deficiency is largely under genetic control.

The cultures of the world differ in many ways, but also to the extent to which they depend on dairy products for their subsistence. Some cul-

tures have never kept dairy animals and have had little lactose in their diets. These groups include the Aborigines of Australia, the natives of New Guinea, the Eskimos and the American Indian. Some cultures have historically kept dairy animals but for various reasons have never included lactose in the adult diet. This group includes the Chinese, the Thais, Filipinos and most African Negroes. Some cultures have historically kept dairy animals and have included significant quantities of lactose rich foods in the adult diet. This group includes the herding cultures of the Middle East, the Nilotic herders of East Africa, the populations of the Middle East and most Europeans and their descendants.

There thus seems to be an association between the incidence of adult lactase deficiency in a population and the historical inclusion of lactose in the adult diet. It is claimed¹ that domestication of dairy animals did not take place much earlier than between 9,000-11,000 years ago. The question arises whether all people were lactase deficient prior to domestication of animals and developed lactose sufficiency by outbreeding until they could benefit from domestication and acquisition of dairying technology. The other possibility of course is some cultures retained lactase sufficiency and thus could benefit from domestication of animals and dairying technology.

It is clear, however, that caution should be exercised in presenting foods to persons or groups from other cultures particularly traditional non-Western cultures. There is an expanding literature rich in accounts of failures of attempts of well-intentioned persons to "upgrade" the diets of others in the absence of adequate knowledge about the tolerances of the recipients. The lactose intolerant Navajo Indians of the Ameri-

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can South West for instance are known either to throw away or feed to lambs powdered milk provided by the U.S. Government. Villagers in Guatamala and Columbia whitewash their houses with the powdered milk provided by international agencies.

In regard to the future of milk feeding programs there should be an immediate curtailment of all efforts directed at the feeding of lactose rich foods to lactase deficient adults and if necessary substitution of dairy products in which lactose has either been removed or altered through fermentation. Examples include most cheeses and such products as yogurt. Programs directed at feeding milk supplements to infants and children may still be useful but each must be re-evaluated individually.

Among things to be considered are (a) age of recipients involved, (b) age of onset of deficiency in recipient population (c) probability of contamination of milk during preparation of formula (d) possibility of substitution of other foods more useful to all members of the household and (e) the impact that the introduction of a particular supplement is likely to have on other non-dietary related behavior in that society. It would appear that anthropologists could well be incorporated in teams making such decisions.

The physician of course should routinely check for lactase deficiency all patients regardless of cultural background who complain of undiagnosed gastric complaints and who include large amounts of lactose rich foods in their diet. This can easily and simply be done by having patients abstain from such foods.

The varying frequencies of adult lactase deficiencies among races of man suggests that perhaps there are other differences between intra-group and inter-group individuals and such differences should be looked for perhaps to understand differences in susceptibility and incidence of disease. We are at the threshold of a new science of nutrition.—L.H.N.

Reference

Adult Lactose Tolerance. JAMA 213, 2257, September 28, 1970, McCracken, R. D.

Electrical Safety In Hospitals

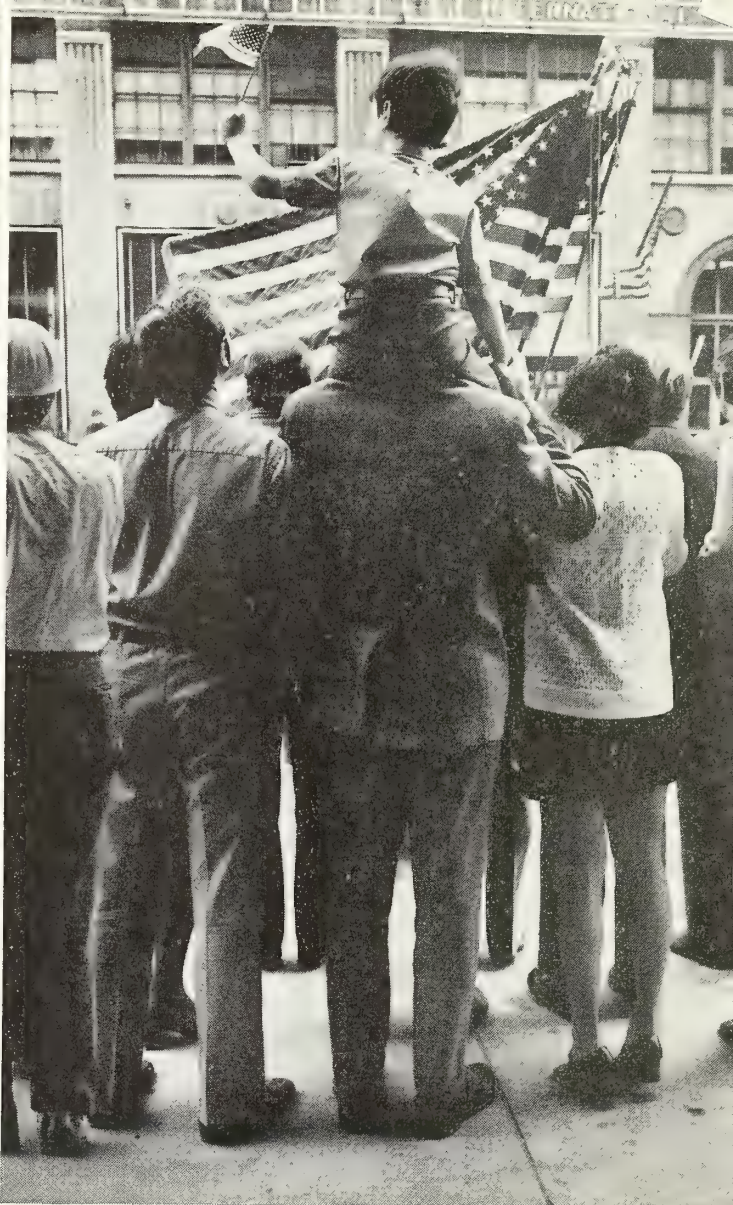
For many years concern about electrical safety in hospitals applied chiefly to operating theaters. Here the danger was straightforward for most of the safer anesthetics available were in-

flammable and explosive when mixed with air, oxygen or nitrous oxide and were thus liable to be ignited by sparks. In 1952 nine explosions were reported in England and Wales.¹ In 1956 a working party on explosives laid down stringent standards of electrical safety which led to expensive modifications to the fittings in operating rooms and anesthetic measures were made. Since then no fatality has occurred where the full precautions have been put into affect. The number of explosions too has sharply diminished and in 1961 only one case was reported and none since.

Two other factors helped to reduce the explosion risk. One was the introduction of halothane, an anesthetic which proved to be a better and safer non-explosive agent than any previously available. A second factor was the extension of the use of diathermy to arrest hemorrhage during operations for it was this that made the use of a non-inflammable anesthetic obligatory. The Working Party that laid down the guidelines probably over estimated some of the results it was measuring. For example, the limits of the risk zone were taken to be a horizontal distance of 4 feet from the anesthetic machine and 4 feet 6 inches above floor level.

Vickers,² however, has now shown that the zone of risk has a radius of only 25 cm. Even the widely used antistatic flooring is probably unnecessary since the concentration of inflammable mixtures falls below the danger level within a very short distance of the expiratory valve. Indeed, only static sparks generated in the airway or inside the apparatus could cause an explosion. Nonetheless, many feel that it is premature to abandon these precautions.

The use of diathermy to arrest hemorrhage has brought its own electrical troubles usually in the form of burning the patient. The cause of this appears to be inadequate grounding which produces coagulation at the point of application. If the indifferent electrode is properly constructed and adequately applied so that the current is distributed over a wide area there should not be any danger whatever of diathermy burns. But if the wire connecting the indifferent electrode to the patient becomes damaged or fractured within its insulating sheath then grounding is no longer adequate. The current must now find its way to earth by some other path. If some part of the patient is in direct contact with metal, then the point will be used by the current on its way to ground. If the area of contact is



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*U.S. PATENT NO. 2,895,677

small then the intensity of current will be large and the heating effect of the current will be sufficient to cause a burn. Similarly, in monitoring patients during surgery burns have been caused by accidental grounding of the diathermy current through electrocardiographic electrodes. In order to prevent such accidents modern diathermy machines give audible warning if the resistance of the path to ground reaches a critical level.

In some patients who have a pacemaker in situ, ventricular fibrillation is liable to occur when diathermy is used to arrest surgical hemorrhage. The risk is apparently not very serious, but the fact that such accidents have occurred is an indication for considerable caution. Demand and triggered pacemakers are particularly sensitive to electrical interference, but most fixed rate pacemakers are relatively resistant to interference. The latter, however, are going out of fashion. Patients with well insulated battery

operated pacemakers are, however, probably safe.

The major electrical hazard for patients today lies in the monitoring apparatus, the bulk of which is electronic and dependent on main's power supply. In this country leakage currents have lately been blamed for 1,200 deaths annually in patients on monitors. Minute currents applied directly to the heart can precipitate ventricular fibrillation. For example, Whalen and Starmer³ suggest that a current as low as 180 micro amps will fibrillate a human heart and currents under 20 micro amps have been claimed to produce ventricular fibrillation in dogs.

Such minute currents can readily arise from electrical leakage from monitoring equipment. The path to the myocardium may be the wiring of a cardiac pacemaker or a cardiac catheter introduced for cardioangiography or manometry. An isolated power supply for each piece of apparatus would greatly add to safety. However, it would be very expensive and would not in any case provide complete protection.

An alternative would be exclusive grounding of everything connected with the apparatus, since the patient himself is effectively grounded through his bed. The difficulty arises because though the grounding may be effective initially, there is no certainty that a system will remain effectively earthed indefinitely. Minor damage to three pin plugs or faults in the wiring system can cause the dangerous small leakage of current which lead to fatalities.

Lancet⁴ points out that there is no international agreement among manufacturers on standards of grounding. It suggests a publication which would not only review the inherent safety of the design of the apparatus initially but would also give some information about its performance over a long period. Our State Society is fully aware of electrical hazards in hospitals and has appointed a special committee to draw up guidelines for hospitals in promoting electrical safety for their patients.—L.H.N.

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Computers In Cardiovascular Medicine

There are two types of computers in use in cardiovascular medicine (CVM) today the analog and digital. The analog computer is used to analyze and filter the electrocardiogram, recognize and record frequency of ectopic leads, calculate and record the heart rate, systolic and diastolic and mean arterial pressure and also the cardiac output. This type of computer is limited in value since it possesses no capacity for memory and is thus unable to correlate a patient's current physical status with other variables such as his past condition, previous history or physical findings.

The digital computer does have memory, can perform a wide variety of independent operations, additions, subtractions, multiplications. However, it performs each operation one step at a time. It requires a "program" that tells it what step to take next and where in the circuitry to store resultant information. Thus there are two main ingredients in any undertaking involved in the digital computer field in medicine: the computer and the program, i.e. instruction to the computer concerning a particular task.

Most common applications of digital computation in CVM have been in the areas of ECG diagnosis, patient monitoring and storage and retrieval of information derived from the patient's history and physical examination. A variety of programs have now been developed and tested and are now commercially available for use by the cardiologist and the cardiovascular scientist. Computer analysis of scalar 12 lead ECG as well as vectocardiogram is now possible.

One problem is the variation that exists between a given experts reading on an ECG and computers diagnostic analysis of the tracing. The computer analysis tends to over reading. However, good agreement between an expert and the computer can be anticipated in at least 90 percent of instances. It is now possible to obtain ECG analysis by computer via ordinary telephone lines within minutes. In some instances computer recognition of abnormal tracings can be linked directly and automatically initiate additional expert consultation within a large unit.

The computer cannot substitute for a physician's judgement based on the patient's previous ECG, history or physical examination. In the assessment of these important diagnostic factors as well as in the assessment of small variations in the ECG wave form the computer cannot re-



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place, but can only supplement the skilled judgement of the physician.

Perhaps the most rewarding and eventually most important application of computer ECG analysis will be in the area of intensive care monitoring. For it is here where rhythm disturbances and prompt treatment of bradycardia and/or ectopic ventricular beats, and prompt treatment can reduce mortality from acute myocardial infarction. However, such observations are limited by the ECG skill and endurance of the observer. Programs are now available for on-line interpretation of arrhythmias and for on-line analysis of wave forms, which make it possible to utilize computer diagnosis in the CCU setting for on-line patient monitoring.

Computer analysis of signals obtained with appropriate transducers can be used to monitor constantly not only the ECG but also respiratory function, blood pressure, and other physiologic functions. Programs have been devised which enable the computer to alert nurses or attending physicians whenever predetermined specified arrhythmias or alterations in hemodynamic or respiratory status occur. Computer systems currently commercially available cost less than \$10 per day per bed and can significantly supplement present monitoring technique.

Another area in which computers now contribute effectively to CVM is that of maintaining medical records. So far the extent of utilization of this important application has been disappointing. The effort required to code medical information, the massive amount of material to be stored and ultimately retrieved and the extensive programming efforts required to implement storage and retrieval have thus far precluded widespread adoption of computer utilization in this area.

Recent emphasis and the development of techniques necessary for direct computer-physician interaction have overcome some of those problems. Such interaction can be utilized as follows: the computer is programmed to flash a question on an oscilloscope screen. The physician responds with a yes or no position or by typing a response in ordinary English. The computer's question continues usually according to a "branching" pattern similar to that employed by a physician obtaining a history. Thus the computer might inquire whether chest pain had been present. An affirmative response would lead to additional questions concerning details in-

cluding its radiation, intensity, duration and frequency. Depending on the response the computer would ask additional questions to obtain further relevant data. By this means data can be obtained for storage and retrieval in a logical format.

This approach has proven extremely successful in practice. It has been applied to storage and retrieval of information in nurses notes, intake output records, indication records, and the physician's history and physical examination reports. The practical application of this approach has been demonstrated in several centers. However, the large initial cost of equipment and skilled personnel needed has delayed widespread application.

Within the near future computer techniques will undoubtedly be widely utilized in CCV. Initially perhaps widespread utilization will occur in the form of on-line monitoring. ECG interpretation and particularly large scale ECG screening are clearly amenable to computer diagnosis.

It will probably not be too long before these powerful instruments can be economically applied in facilitating information storage and retrieval.

Such applications will be of considerable importance in effective maintenance and utilization of medical records for patient care as well as for investigation in cardiovascular medicine.—
L.H.N.

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A More Hopeful View Of Therapy In Hodgkins Disease

The traditional attitude towards Hodgkins Disease has been of pessimism because of the low survival and youthfulness of many victims. Recent years, however, have seen a significant change in reported results and consequently in physicians' attitudes. At least 2 factors have produced this change. First is the reappraisal of gross and histologic patterns of the disease.¹ This culminated in the staging plan suggested in a symposium held in Rye, New York in 1965. Staging has given the therapist a solid base from which to work. The second major change is concerned with radiotherapy. The fact that the

massive adenopathy of Hodgkins disease melted away with small doses of low kilovoltage treatment often used as a diagnostic measure. "The test of therapy" understandably misled therapists into suboptimal treatment patterns.

Improved knowledge of clinical variations has led to greater confidence in the use of larger doses of megavolt radiation. Currently, this consists of 3,500-4,000 rads of wide field megavolt therapy for over a 3-6 week period. This has been expressed with great force and clarity by Kaplan and others. Kaplan² has found that 50 percent of patients with previously untreated disease classified as stage I have survived 5 years. The actuarial likelihood of recurrence after this time is considered to be under 5 percent.

It was inevitable that this changing philosophy should attract the attention of surgeons. The persistent notion that mediastinal Hodgkins disease is relatively favorable has been shown to have some truth. In Lukes'³ World War II series 59 per cent of patients with intrathoracic disease had nodular sclerosis, a less anaplastic variety. Burke reported a similar incidence in resected specimens. These authors are responsible for current interest in surgical treatment in this disease although a kindred philosophy has been championed by Slaughter⁴ for many years.

Two recent reports reveal that surgery, like radiotherapy, is being extended in Hodgkins disease. In one from Tel Aviv, Israel bilateral thoracotomy was performed a few weeks apart for stage 2 cases. Boyd⁵ occasionally accomplished excision in bilateral hilar disease using median sternotomy thus obviating a second major procedure. Boyd has been deterred from radical surgery in patients with systemic symptoms since this has appeared to him and others to be an unfavorable omen. The report by Levinsky et al. from Tel Aviv constitutes a courageous advance from an accepted technique although the follow-up was short and the basis is but one case. Another report by Nuland⁶ is especially noteworthy since he describes the use of splenectomy as an adjunct in the treatment of Hodgkins. The only patients not operated upon are those too ill to withstand surgery either because of the Hodgkins disease, or an intercurrent medical condition.

Nuland used three criteria which must be met in order to justify exploratory surgery for patients with Hodgkins disease. He recognized

that a high proportion of patients will harbor disease that is either unsuspected or unprovable without laparotomy. That the spleen may not be involved and yet reveal nodes behind it that are involved. The third reason for splenectomy is facilitation of treatment. With the spleen removed as well as a few inches of the distal splenic artery and vein there is no need to irradiate the peripheral portion of the left upper quadrant.

It is clear then that it is essential to undertake painstaking and accurate staging and histologic assessment. In addition, the hematologic study gastro-intestinal and urologic roentgenograms are required. Lymphangiography is mandatory. Laparotomy is mandatory because of a 15 percent error in lymphangiography and to accomplish splenectomy as Nuland has shown, there is present minute lesions in many normal sized spleens and removal of the spleen allows the therapist to spare the left upper quadrant especially the left kidney if radiotherapy becomes necessary.

Much remains to be learned and done, but the direction being taken seems right, and it is likely that even severe scrutiny would find some basis for optimism in the future of many cases of Hodgkins disease.—L.H.N.

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Society And Medicine: Cholera

The sad conditions of Bengal will remain a sombre reproach to developed nations for many years to come. The circumstances that could have arisen in which several million people could feel it prudent to pack up their belongings and move to an unfamiliar place is an echo of the ways in which migration was forced on medieval

people by events over which they had no control. Since the second world war there has been no marked decrease in the prevalence of refugees and in that spirit practical men will no doubt be concerned not so much with making the columns of refugees go away as with working out ways of accommodating them more easily.

The occurrence of cholera, a threat ever since the army of Pakistan moved against the secessionists is one of many symptoms that need treatment. By now natural as well as artificial disasters are frequent enough and damaging enough for the threat of disease of some kind to be recurrent. Earthquakes in Turkey or the Andes constantly provoke fears of cholera epidemics and so do natural catastrophes such as the typhoon that killed a million people in the Bay of Bengal last year.

Where cholera is concerned the orders of magnitudes are after all easy enough to predict. There is probably a continuing need for some millions of doses of vaccine and for enough saline solution to treat 100,000 people or thereabout keeping such a stockpile fresh ought not to be an insuperable task. Similar precautions should of course be taken to guard against the threat of disease of other kinds, plague, yellow fever, measles and polio vaccine etc. Exactly similar arrangements are necessary if the United Nations is to be in a position to deal with other types of international disasters from typhoons to earthquakes. The experience of the past few years has shown quite clearly that there is a need for internationally accessible pools of helicopters and for ways of moving communication equipment into regions where existing arrangements are disrupted by emergencies. The unhappy lesson of the recent past agree for speedy attention to this problem.

In the long run, however, no amount of vaccination will be sufficient to safeguard against cholera. The long term defense cannot rely on medicine but on society. The society requires better plumbing not simple vaccination. It is also relevant that the incidence of cholera like that of many other diseases of the developing countries is closely dependent on nutrition. People who are well nourished are much less susceptible. It follows that the best defense against cholera is nothing less than the old fashioned recipes which the art givers have been advocating for decades, the general improvement of the health of the people.

It goes without saying of course that the comparison of the cost of the vaccines which have been rushed to Calcutta, general improvement in plumbing and health is enormously more expensive. To provide a developing population of a million people with decent housing and plumbing would no doubt cost much more than the annual product of the nations to which they belong. Even in this country the cost of eliminating lead poisoning would require renovating seven million apartments for which no money has been found. In other countries improving health and nutrition would require changes in the balance between city and rural life. In the long run it is of course unthinkable that such facilities could be financed from sources other than the productivity of the people concerned, which in turn implies that the ultimate defense against cholera and diseases like it is not even plumbing but prosperity.

It may be too much to hope that mere economic advancement will remove the underlying cause of the unhappy migration of the past few weeks. There is, however, at least a chance that it could take the edge off some of the anxieties which the migration has caused. The four horsemen of the Apocalypse are still riding in this mixed up world.—L.H.N.

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Cholera Prophylaxis is plumbing and Prosperity. *Nature*: 231, 341. June 11, 1971.

Society And Medicine: Drug Addiction

The way politicians like to solve pressing problems is to create agencies, government departments, task forces and other conspicuous instruments of public administrations with, of course, lots of jobs. Nixon seems to be following this path by endowing with 155 million new money a Special Action Office for Drug Abuse Prevention, an instrument of government independent of other agencies but with responsibility for coordinating what happens elsewhere. President Nixon himself described the new program as an "all out offensive" on drug abuse. Primarily because the problems are important, however, it is proper to ask whether the methods, even the objectives of what is now intended are those most likely to help ameliorate the abuse of drugs in this country. The steps proposed have the form of ways of making the symptoms go away without removing the underlying causes of drug abuse. Obviously curing a heroin addict, laudable

as this is, is not going to expose the evils in our country that leads to addiction and therefore cannot in the end lead to abolition of the problem.

The scale on which drugs are being used in this country is without question a source of great alarm. Heroin addicts are thought to exceed 200,000, about half of them in New York. Something like 15% of the U.S. troops in Indochina are thought to have experimented with heroin. At home more than 10 million people have probably used marihuana. The unconsciousness of more serious addiction has probably overshadowed what must increasingly seem an effete behavior. But what is to be done. We must of course treat the symptom of the societal disease but we must also study the factors in society that has led to this enormous copout by our young people.

To be sure we need more facilities for the treatment of heroin addicts and this is probably where the biggest slice of the extra money will be spent—an extra 105 million. The new proposal should bring benefit to many people. There will be a modest expansion of methadone program and Dr. Jerome H. Jaffe who pursued this with periodic flair in Chicago is to be the Director of Mr. Nixon's Special Action Office. So far as it goes this part of the program is sensible enough. But there are difficulties. If there are really 200,000 heroin addicts in the country, the 200 million federal fund now available each year for treatment and medical research certainly cannot meet the whole need. This makes it obvious that even the strictly medical part of the program now proposed cannot deal with the whole problem but only with a part of a part of it. Other parts of Nixon's program are more questionable. A great deal of talk and a good deal of the money are to be spent on the enforcement of existing laws. There will be more efficient detection of smugglers of addictive drugs and research programs in the Department of Agriculture to develop potentially selective herbicides that could be used for destroying fields of opium poppies without doing damage to surrounding forms of life. We do not know how the program will work in spraying Turkish poppy fields or how it will work against poppy growers in other nations. The trouble in all this is, of course, that there is no assurance that the mere restriction of heroin supplies will restrict the recruitment to the ranks of addicts. There is at

least a chance that greater scarcity even if it could be brought about by the stricter enforcement of domestic and international laws would serve first of all to drive up the price and thus still further increase the difficulty which addicts already experience in paying for their fix. They might become more desperate and more criminal.

Methadone is cheaper and can be used in therapy within the law. But in the circumstances which now obtain is there not at least a case for asking whether there might be advantages in a state monopoly with supply restricted to registered and verified addicts at no cost worth speaking of and in circumstances in which it would be possible to monitor the symptoms of their condition and strive to wean them from this addiction. Dogmatically to advocate such a cause would be foolhardy but there is a strong case for asking whether an efficiently organized version of a system tried in Britain may have a part to play in the extraordinary circumstances now to be found in this country. To be sure much more would have to be known about the use of heroin in a maintenance regime. Obviously there would be risks since we do not have enough knowledge how to control an individual's use of the drug.

But there would be no doubt that the use of heroin in the treatment of heroin addiction would put the pushers to rout and would at the same time make it easier to extend the treatment of serious addiction among the heroin addicts who lack either the will or the wish to become dependent on methadone. The difficulty, of course, with such a policy would be societal, a turnabout on policies towards addiction. But of course this is no reason to ignore the issue.

One of the most serious weaknesses of the Nixon program is that its fine intentions are not supported by a sufficient reflective analysis of the problem to be solved. Suppose we knew now about how people are first persuaded to try their luck with marihuana or heroin will not keep them safe. By now after all the causes of juvenile delinquency are well documented but this does not keep young people out of trouble. To reap the benefits of what social scientists have to say about drug addiction requires applied research in every way comparable to the technical development necessary to make economic sense of engineering innovations.

Unhappily there is no very clear concept of how such work should be planned and organized.

There may be much to be gained from programs with formally educational objectives. Or there may be more adventurous schemes such as those in which community life of one kind or another is offered as a means of helping addicts do without drugs. In these directions, however, it is clear that serious work is only just beginning. It is also clear that the program of research monitored by organizations such as the NIMH will in due course provide valuable results. Yet the tone of Nixon's statement like the balance of the ingredients in his package of proposals for fresh expenditures smacks too much of familiar talk of "law and order" and is too neglectful of the opportunities for constructive work on the causes of addiction. What's wrong with a society in which the youth turn to dope rather than to constructive achievement?

Unless those in charge are careful there is even a danger that too much emphasis on action will obscure the problems which really need attention, those of providing a full and sensitive picture of the reasons why drug addiction has blossomed in the past few years. Treating the pusher and the addict will not make the societal disease go away. These are just the symptoms. We must search for the diagnosis. What is wrong in our society that has pushed so many of our youths to reject it by escaping into drugs?—L.H.N.

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Slamming the Wrong Stable Door? *Nature* 231. 479. June 25, 1971.

Drug Reactions In Therapeutics

We are a pill taking society. A major cause of preventable drug reactions is that too many pills are prescribed. The physician prescribes pills for 75 per cent of his patients and the patient is not happy unless a pill is prescribed.¹ Modern therapeutic agents in addition to their ability to influence favorably the course of many diseases have also created formidable health problems. The duration of hospitalization is about doubled in 18-30 per cent because of drug reactions. In addition 3-5 per cent of all hospital admissions are primarily for drug reactions² and 30 per cent of these have a second reaction during their hospital stay. The economic consequences are staggering. One seventh of all hospital days are devoted to the care of drug toxicity at an estimated yearly cost of three billion.³

Classic drug reactions include symptoms related to the subjects immunologic response to standard doses of the drug (hypersensitivity reactions). They may also be due to his inordinate response (hyper-reactivity) to usual or less than usual doses. There may occur also his predictable response to an over-dosage of the drug or drug combinations. If most drug reactions resulted from hypersensitivity, idiosyncrasy or the inevitable risk assumed when toxic drugs are used such as the risk of pancytopenia from anti-tumor agents, we would be powerless to change it no matter how much we may lament the fact. However, classic reactions take up less than 20-30 per cent of drug reactions.⁴ The remaining 70-80 per cent are predictable, most are preventable without having to compromise on the treatment benefits of the drugs.

In addition to reactions per se, adverse consequences of drug administration exist, for example prescription of drugs for symptoms only may delay diagnosis of a disease possibly preventing appropriate therapy for a curable disorder. In addition the inappropriate drug may because of toxicity cause a disorder to which a patient would otherwise not be subject. Ulceration of the bowel may develop from KCL. Intramural intestinal hemorrhage from anticoagulants, retinal disorders from phenothiazines, cardiac failure from propranolol, changes in carbohydrate tolerance from diuretics, liver damage from many drugs, renal tubular acidosis from antibiotics, neuropathy from anti-cancer agents, aseptic necrosis of bone from corticosteroids.

One major cause of drug reactions is the physician not overtly setting a therapeutic end point for the drug he prescribes. In not setting a therapeutic end point he often reaches a toxic end point. Digitalis provides an excellent example. It is unquestionably indicated for the treatment of congestive heart failure and atrial arrhythmias. The beneficial effects of the drug are primarily related to its ability to increase myocardial contractility and cardiac output. As the dose is increased the myocardial contractile force rapidly increases and K is lost from cells. But this happens after contractile force is developed. Therefore digitalization usually precedes electrocardiographic evidence of increased ventricular irritability. Digitalis has a relatively wide ratio of beneficial to adverse effects, but this is often ignored. Of those taking digitalis alone 10 per cent give evidence of toxicity. Toxic-

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ity appears in 17-35 per cent of patients taking digitalis and diuretics. Digitalis accounts for 21 per cent of all drug reactions in hospitals and in one such study⁵ such reactions were lethal in 30 per cent of cases.

Lack of therapeutic objective serves to increase another type of "drug reactions", lack of therapeutic effect. The simple commitment to treat requires that the drug be given in doses sufficient to produce an effect. Well made plans for observation of drug effect should be made before administration. If no effect, perhaps larger doses and more frequent are needed. If no effect perhaps an alternative route of administration is advisable—for example diphenylhydantoin is useless intramuscularly.⁶

When a substance fails to give a desired result then one considers alteration in its absorption, metabolism or its elimination should be considered. If the treatment objective has not been predetermined, lack of efficiency is difficult to recognize and a useless and perhaps potentially toxic agent will continue to be administered. The cause of drug reactions related to the lack of therapeutic end point is the physician's overly hopeful expectation of drug therapy. Digitalis is again an example. Its toxicity often appears in clinical situations in which it has lost its efficacy (congestive heart failure secondary to mitral insufficiency, extremely severe aortic stenosis or a very large arteriovenous shunt.

Benefits of digitalis in such situations are minimal despite a major increase in myocardial contractility. Therefore the physician is tempted to increase the dosage until the toxic levels are reached. Here little benefit has been obtained but the life of the patient may have been endangered. This is an example of heroics leading to toxicity. Analogous circumstances are associated with administration of sedatives, antibiotics, analgesics, diuretics, anti-inflammatory agents, corticosteroids, oral hypoglycemic agents and a host of other potent chemicals.

Other factors predisposing to currently observed increase in drug reactions include the greater availability of potent prescription drugs, public exposure to drugs used or produced industrially that enter the environment. Another factor is availability of potent drugs without prescription and availability of illicit preparations. Finally is a need by the physician to perfect his knowledge of the pharmacology, pharmacokinetics and the chemistry of the drugs he

uses. This also implies knowledge of the physiologic factors in both health and disease that predispose to drug reactions. All these can predispose to inadequate prescription practice.—L.H.N.

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LEGISLATIVE REPORT

Forewarned Is Forearmed

Governor Signs Physician's Assistant Bill

As passed by both Houses of the General Assembly, Governor Meskill signed into law an amendment to the Medical Practice Act which reads as follows (the words of the amendment are printed in upper case letters):

Chapter 370 Medicine and Surgery

Section 20-9. Who may practice medicine or surgery. No person shall, for compensation, gain or reward, received or expected, diagnose, treat, operate for or prescribe for any injury, deformity, ailment or disease, actual or imaginary, of another person, nor practice surgery, until he has obtained such certificate or registration as is provided in Section 20-10, and then only in the kind or branch of practice stated in such certificate; but the provisions of this Chapter shall not apply to (there follows a listing of healing arts practitioners and others to which, practicing within the limits of their own special licensures, the provisions of this Chapter do not apply); (NEW) NOR TO ANY PERSON RENDERING SERVICE AS A PHYSICIAN'S TRAINED ASSISTANT, A REGISTERED NURSE, OR A LICENSED PRACTICAL NURSE IF SUCH SERVICE IS RENDERED UNDER THE SUPERVISION, CONTROL AND RESPONSIBILITY OF A LICENSED PHYSICIAN, EXCEPT THAT THIS SECTION SHALL NOT AUTHORIZE ANYONE TO PRACTICE OPTOMETRY AS DEFINED IN CHAPTER 380 OF THE GENERAL STATUTES OR TO PRACTICE DENTISTRY OR DENTAL HYGIENE AS DEFINED IN CHAPTER 379 OF THE GENERAL STATUTES, AS AMENDED.

The Legislative History of the Amendment

At the opening of the 1971 General Assembly, the Society elected to follow the advice of the AMA Council on Health Manpower regarding the promotion of legislation at this time to cover the utilization of "physicians' assistants" in medical practice; i.e., to observe a moratorium on seeking legal status for such assistants for the reason that the standards of education and training for the burgeoning number of assistant categories are currently in a state of rather complete chaos.

However, shortly after the Assembly convened it was learned that several bills had been dropped into the legislative hopper which, in one way or another, proposed to amend the Medical Practice Act in such a manner as to exempt "assistants to physicians and surgeons" from the limiting provisions of the Act; i.e., that *only* licensed M.D.'s may practice medicine.

Sensing that some sort of subject bill was likely to be enacted into law, the Council directed that the Society's legislative representatives seek to gain acceptance of substitute wording for the several bills on file so as to make their provisions in keeping with the AMA's advocacy that such legislation should *make it legal for the physician to delegate medical practice procedures to a qualified assistant* instead of making it legal for assistants to practice medicine under physician supervision.

Accordingly, the Society offered substitute wording for all bills then under consideration as follows (in part): "Nothing in this section (20-9) shall be construed as prohibiting a licensed physician or surgeon from delegating the performance of certain acts, tasks or functions required for the care

of patients to an assistant whose qualifications to perform such acts, tasks or functions have previously been determined by such physician or surgeon. . . .". The Society's legislative representatives were assured that the substitute wording was "liked" by most of the sponsors of subject bills and that the latter were agreeable to have their bills so amended. There appeared to be no opposition to making this important change. There was cause for optimism.

However, for reasons best known to those who direct the mysterious doings of the legislature, the Society's substitute wording was somehow consigned to oblivion and, instead, a series of amendments were made by the Assembly's Committee on Public Health and Safety, by the House and by the Senate—each going further away from the Society's objective than the last—until the bill cited at the beginning of this article was sent to the Governor's desk for his signature.

A Final Appeal

In two successive letters to the Governor, the Society urged him to veto the bill passed by the House and Senate for the following principal reasons:

- (1) *Misplaced Authorization:* In effect, the bill authorizes physicians' assistants to practice medicine without a license, provided that they practice under the supervision of a physician. This will establish a most dangerous precedent, and is not at all equivalent to authorizing Doctors of Medicine to utilize the services of qualified assistants in carrying on and expanding the scope of their medical practices. From the standpoint of professional responsibility (including malpractice actions) it should be the physician—not the assistant—who should have the protection of law.
- (2) *Exclusions:* The exclusion of optometric procedures from the generally unlimited scope of medical practice services that a physician may delegate to a qualified assistant is entirely unwarranted and ignores the facts of law. The field of Optometry was established to limit by definition the procedures performed by Doctors of Medicine (Ophthalmologists) which could also be performed lawfully by persons licensed to practice Optometry. The Optometry statutes do *not*

apply to Ophthalmologists and, hence, should not apply to *medical* procedures that an Ophthalmologist may elect to delegate to a trained assistant. If signed into law, the effect of this exclusion would be to disqualify hundreds of competent technicians who have been trained by Ophthalmologists and who are presently performing procedures under the physicians' supervision and control . . .".

The End Result

Despite the arguments for veto advanced by the Society and (it is understood) by many non-physicians concerned about the provisions of the bill, Governor Meskill replied: "I greatly appreciate your taking time to express your opposition to this bill. However, after very careful consideration of Senate Bill 1224, I signed in into law on July 8, 1971".

Conclusions and Cautions

- (1) The law specifically prohibits physicians' assistants from practicing Optometry, Dentistry or Dental Hygiene, but, with gross inconsistency, grants them quasi-licensure to practice Medicine and Surgery. It gives clear legal protection to physicians' assistants who perform medical practice procedures. It does *not* give similarly clear legal protection to the physician who delegates such procedures to an assistant. Every member of the Society who uses, or contemplates using, assistants in his practice is advised to consult with his attorney regarding the application of the wording of this provision to his own particular situation; also, to check with his professional liability carrier regarding its application to malpractice coverage.
- (2) Ophthalmologists, in particular, may be adversely affected by the law's "practice of Optometry" exclusion since the utilization of trained technicians in their practices may have been placed in "legal limbo" by its enactment.
- (3) The Society disclaims being either a "poor loser", a "devil's advocate" or a "Philadelphia lawyer" in voicing these cautions to the membership. It merely recommends a "go slow" approach in the matter of utilizing assistants under this new law.

FROM THE EXECUTIVE DIRECTOR'S OFFICE

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SUMMARY OF ACTIONS COUNCIL MEETING

Thursday, June 17, 1971

I. Attendance

Present in addition to the Vice-Chairman, Dr. D. A. Grendon, were: Drs. Weber, Jr., Cramer, Backhus, Nolan, Granoff, Dean, Fabro, Hess, Bradley, Rem, Johnson, Ragland, Jr., Harwood, Pelz, Palomba, Roch, Nemoitin, Friedberg, Harkins, LaBella, Root, Jr., Freedman, vonGlahn, Dambeck, and Klare.

Also present were: Dr. Richards, Mrs. Lindquist, Mr. Sullivan, Mr. Tomat, and the new field representative from the AMA, Mr. Kenneth Bugan.

Absent were: Drs. Burnham, Brandon, Gardner, Wilson, Van Syckle and Luby.

II. Routine Business

Approval of Minutes

As presented and distributed, it was VOTED to approve the combined minutes of the meetings of May 20 and May 26, 1971.

Life Membership

It was VOTED to approve an application for Life Membership received from the following eligible Active Member:

William T. Veal, 99 Water Street, Stonington—(NLCMA)—1971

Date of Next Meeting

The next meeting of the Council was scheduled for Wednesday, July 14, 1971. Dr. Joseph A. Sabatier, Jr., Chairman, AMA Committee on Quackery, is being invited to join the Council at this meeting. The hour of meeting will be determined by the length of the agenda.

III. Old, New and Special Business

Election of Student Member

It was VOTED to elect to Student Membership the following student who is enrolled at the medical school indicated: Ludwig M. Frank, 21 Walbridge Road, West Hartford, University of Connecticut, Class of 1973, Pre-Med: LaSalle College. Parent: Ludwig M. Frank, M.D.

Resignations, Appointments, Etc.

(a) It was VOTED to accept, with regret and thanks for past service, the resignations of Reginald C. Edson, West Hartford, from the following posts:

1. *Committee on Public Health*: No replacement was made.
2. *Committee on Rehabilitation*: Since Dr. Edson was on this Committee as a representative of the Committee on Public Health, it was VOTED that the Chairman of that committee be requested to appoint a member of the Committee on Public Health to replace Dr. Edson on the Committee on Rehabilitation.
3. *Judicial Committee*: It was VOTED to appoint Harry J. Tamoney, Jr., Hartford, as the Hartford County representative of this committee, to complete the unexpired term (1968-72) of Dr. Edson.
4. *Delegate to the Council of New England State Medical Societies*: It was VOTED that the President of the Society appoint a delegate to fill this post.

(b) *Member of Public Health Council*: Having been informed that W. Bradford Walker, Cornwall, is completing his third or fourth six-year term on the Public Health Council as of 6/30/71 and does not wish to be reappointed, it was VOTED to recommend to the Governor the names of Drs. Morris A. Granoff, New Haven, and Kurt S. Pelz, Wallingford, for consideration when making his appointment.

(c) It was VOTED to accept, with thanks for past service, the resignations of Dr. Bernard A. Burnham, Waterbury, from the following posts:

1. *Treasurer of CSMS*: Hilliard Spitz, New London, was elected to replace Dr. Burnham as Treasurer for the unexpired term of 1971-72.
2. *Committee on National Legislation*: No replacement was made.

3. *Committee on State Legislation*: No replacement was made.
 4. *Committee on Public Affairs*: No replacement was made.
 5. *Ad Hoc Committee on Health Care Statement*: No replacement was made.
 6. *CSMS Representative, CRMP on Financing of Health Care*: No replacement was made.
 7. *Member (CSMS-nominated), Connecticut Hospital Planning Commission*: It was VOTED to nominate Stuart Ragland, Jr., Colebrook, to the Connecticut Hospital Planning Committee, as a replacement for Dr. Burnham.
- (d) *CUPIS, Inc.—Board of Directors*: In response to a request from CUPIS, Inc., it was VOTED to nominate Marvin Garrell, Fairfield, to serve as the Society's representative on the CUPIS Board of Directors. (Note: Dr. Garrell has declined the appointment and Dr. Weber, President, will sit in on the initial meeting of the Board of Directors which will be held on June 24.)
- (c) That the new committee be authorized and encouraged to arrange for experts in the several subject fields to meet locally with the members of the committee at whatever length is indicated to familiarize the members with the practical aspects of such fields and to assist them in formulating plans and programs suitable for implementation in Connecticut.
- (d) That sufficient funds be allocated to enable the committee to carry out these assignments, the required amount of such funds to be estimated by the committee and submitted, with an action plan, to the Council for prior approval.

It was further VOTED that the new Committee be instructed to poll the County Medical Associations requesting written reports on the current status and effectiveness of their peer review programs, including such information as *modus operandi*, statistical report of cases reviewed for past twelve months (including types of cases reviewed, findings, etc.).

In related actions, it was VOTED:

Guidelines for Electrical Safety Programs

It was VOTED to approve a document titled "Guidelines for Electrical Safety Program" submitted to the Council for endorsement by the Connecticut Hospital Association, including amendments recommended by the CSMS Committee on Hospitals; and to communicate this action to Chiefs of Staff of Connecticut Hospitals and recommend medical staff participation in the program at their respective institutions.

Report of Ad Hoc Committee on Peer Review Organization Planning

It was VOTED to accept a report filed by the Chairman of this Committee, Morris A. Granoff, New Haven, and to approve recommendations of the Committee as follows:

- (a) That the Ad Hoc Committee on Peer Review Organization Planning be dissolved, and that the subject material it has collected be turned over to a larger successor committee.
- (b) That the President and Chairman of the Council appoint a new standing committee of the Council on Peer Review Organization, Foundations, and Health Maintenance Organizations, giving consideration to the names listed in the report and to members of the Board of Directors of the Hartford County Medical Association's Foundation Plan. The purpose of the committee is to undertake forthwith an in-depth study of these related subjects and to make recommendations to the Council and House of Delegates concerning the possible roles to be played by the Society in the several areas, and to serve in an educational capacity for the enlightenment of the membership on PRO's, Foundations, and HMO's. The committee will be asked to report to the Council monthly.
- (c) To accept, as information, a report from the Committee on Statewide Medical Planning recommending that the Society continue to explore the feasibility of establishing a "Foundation" plan for the State of Connecticut and that the Council continue to urge, and to offer assistance to, the Hartford County Medical Association in its attempts to implement its Foundation program. Also, that the Council should endeavor to assist with educational programs sponsored by other county and/or local medical associations in their attempts to understand the Foundation concept.
- (b) To accept, as information, a communication from Kurt S. Pelz, NHCMA Councilor, urging the Council to become immediately involved in investigating the establishment of HMO's and Foundations at state level.
- (c) To accept, as information, two reports submitted by Sidney L. Cramer, Hartford; Kurt Pelz, Wallingford, on their attendance, as CSMS representatives, at the PRO Conference

of the AMA, held in Chicago on May 21, 22, 1971, and to refer these reports to the new Committee on Peer Review Organizations, etc.

Representative-Task Force to Plan & Reorganize Nursing Education & Nursing Service

It was VOTED to request Hilliard Spitz, New London, Chairman of the CSMS Committee on Allied Medical Services, to serve on this Task Force, and, if he cannot, to designate a member of his Committee, who would be willing to undertake this assignment. Mrs. Barbara Donaho, Chairman of this CHA Task Force, notes that meetings of the committee will be held in the forenoon.

Report-Committee on Statewide Medical Planning

It was VOTED to approve the following concerning proposed CRMP involvement in programs in the fields of cystic fibrosis and hemophilia:

Because the care of cystic fibrosis and hemophilia has witnessed many new developments in the past several years and requires further expansion in order to become an all inclusive program of health care which would allow victims of these diseases to live a normal or near normal existence, it is recommended that the Council representatives to CRMP initiate discussion with the Regional Medical Program as to its possible involvement in the organizing of a system for the delivery of the latest types of care to the victims of these two diseases.

Ethics of Credit Card Acceptance

In response to a letter received from the Colonial Bank and Trust Company, Waterbury, requesting an opinion from CSMS on whether it is considered ethical for physicians to accept payment of their fees via commercial credit card (such as Master Charge Card), it was VOTED that the Society does not consider the voluntary use of credit cards by patients to pay doctors' bills to be unethical or unprofessional, provided the physician does not advocate or promote the use of these cards.

State Legislation

Isadore H. Friedberg, Chairman of the Committee on State Legislation, reported to the Council on the status of a number of bills before the General Assembly in which the Society has an interest. Among these was a measure, S.B. 936, "An Act Concerning Payment to Practitioners of the Healing Arts and the Allied Professions for Services to Needy Persons", which has been sponsored by the Society. At the close of the General Assembly, S.B. 936 had not been acted upon, however, because it had been referred previously to the appropriations committee, it was felt that there might be a slight

possibility that it could be considered during the present special session. Therefore, it was VOTED that at the discretion of CSMS Officers, Chairman of Committee on State Legislation, and/or the Lobbyist of the Society an opportunity be sought to discuss S.B. 936 with the Governor, the Commissioner of Welfare, Finance and Control, and all other interested parties and that the President select a special committee, of which he would be Chairman, for this purpose. It was further VOTED that if this Bill could not be heard at this special session that the same approach to discussing the bill be used at a later date.

N.B.: *The foregoing is a summary of the proceedings and action of the Council on June 17, 1971. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by an interested member of the Society.*

Placement Wanted

ALLIED HEALTH PERSONNEL: Effective with this issue of **CONNECTICUT MEDICINE** a category has been established to cover placement wanted in the field of allied health.

Allied Health: 27 years of age; Masters in Public Administration, State University of New York at Albany; administrator personnel director in health care—hospital, group practice, etc.; available September 15, 1971. Contact: Capt. Clement B. Capuano, 517 Honeysuckle, Altus AFB, Altus, Oklahoma 7352.

General Practice—Physician interested in an associate, industrial or group type practice in a medium size community in Connecticut. Connecticut license. Presently in practice. Available immediately. Contact: Elliot S. Phillips, M.D., 1803 Crawford Street, Houston, Texas.

Industrial or School Physician—44 years of age, Eligible. Part-time or full-time in reasonable proximity to New Haven-Cheshire-Meriden-Wallingford area. Presently solo, family practice in small Connecticut community. Connecticut license. Available immediately.

Internal Medicine—29 years of age, National Boards, wishes group, associate or institutional type practice in Connecticut. Presently in practice. Military obligation completed. Available immediately.

Internal Medicine—33 years of age, Eligible with National Boards, wishes associate type practice in a large or medium size community in Connecticut. Military obligation completed. Connecticut license. Available immediately.

Internal Medicine-Cardiology—33 years of age, Eligible with National Boards, wishes group, associate or institutional type practice in Connecticut. Available immediately.

Internal Medicine—Nephrology—32 years of age, Eligible, wishes Army type practice in Connecticut. Available immediately.

Internal Medicine—Chest Diseases—Pulmpphysiology—40 years of age, Eligible, wishes group or institutional type practice in a large or medium size community in Connecticut. Presently in practice. Available immediately. Contact: Gilao D. Renzi, M.D., 1681 Rachel Est. Montreal 177 Quebec Canada.

Internal Medicine—40 years of age, Eligible, wishes group, associate or industrial type practice in a medium or small size community in Connecticut. Has one year of pulmonary disease training. Available immediately. Contact Frank Ruzicka, M.D., 5166 N. Lovers Land Road, A14, Milwaukee, Wisconsin 53225.

Internal Medicine—Hematology—Oncology — 30 years of age, Eligible with National Boards, wishes group, associate or institutional type practice in Connecticut. Available immediately.

Neuro-Surgery—32 years of age, Eligible with National Boards, wishes group or associate type practice in a large or medium size community in Connecticut. Available immediately.

Neurology—33 years of age, Eligible with National Boards, wishes solo, group or associate type practice in Connecticut. Physician is seeking a practice or salaried position combining Neurology with Rehabilitation Medicine, thereby utilizing training in both fields.

Ophthalmology—39 years of age, Eligible with National Boards, wishes solo, group or associate type practice in a large or medium size community in Connecticut. Military obligation completed. Available immediately.

Ophthalmology—28 years of age, Eligible, wishes associate, solo, institutional or industrial type practice in a medium or large community in Connecticut. Available immediately. Contact: Kanwar A. Singh, M.D., 9624 Abaco Ct., St. Louis, Mo. 63136.

Otolaryngology—32 years of age, Certified with National Boards, wishes solo or associate type practice in a medium size community in Connecticut. Has trained and experience in Head and Neck, and Plastic and Reconstructive Surgery. Available immediately.

Pediatrics—41 years of age, Eligible, wishes associate type practice in a large community in Connecticut. Presently in practice. Connecticut license. Available immediately. Contact Sobhy L. Ghabrial, M.D., 100 Milligan Road, West Babylon, New York 11704.

Surgery—Thoracic—33 years of age, Certified, wishes solo, group, associate or institutional type practice in a large community in Connecticut. Available immediately.

Surgery—General and Vascular—33 years of age, Certified, wishes solo, group or associate type practice in a medium or small size community in Connecticut. Presently in practice. Would prefer location near Long Island Sound. Available immediately. Contact Joseph A. Bardenheier, III, M.D., 34 Bayside Avenue, Newport, Rhode Island 02840.

Surgery—32 years of age, Certified, wishes solo, group or associate type practice in Connecticut. Presently in practice. Available immediately. Filed for Connecticut license.

Surgery—36 years of age, Eligible with National Boards, wishes group type practice in a large or medium size community in Connecticut. Interested in a practice of general surgery at a hospital with a teaching program, also, would like to join a group of doctors who have an interest in overseas medical work. Available immediately. Contact: David W. Fricke, M.D., 8340 Church Lane, Apt. 1, Baltimore, Maryland 21207.

Surgery—36 years of age, Certified, wishes group or associate type practice in a large or medium size community in Connecticut. Would consider thoracic and cardiovascular surgery. Military obligation completed. Available immediately.

General Surgery—34 years of age, Eligible with National Boards, wishes solo, group or associate type practice in Connecticut. Available immediately. Contact: Samuel J. Mazza, M.D., 4 Daybrook Drive, Apt. 114, Ayer, Mass. 01432.

Surgery—Vascular—36 years of age, Eligible, wishes associate or institutional type practice in Connecticut. Available immediately.

Urology—37 years of age, Eligible, wishes group or associate type practice in a medium size community in Connecticut. Available immediately. Contact: Prasant K. Mitra, M.D., 2829 Sedgwick Avenue, Bronx, New York 10468.

PRELIMINARY ANNOUNCEMENT

180TH ANNUAL MEETING CONNECTICUT STATE MEDICAL SOCIETY

APRIL 25, 26, 27, 1972

**HARTFORD HILTON HOTEL
HARTFORD**

Placement Opportunities

Emergency Department Physician—Full time on or about September 1, 1971 to join well-established hospital group. Connecticut license essential. Contact Administrator, Meriden-Wallingford Hospital, 181 Cooke Avenue, Meriden, Connecticut 06450. (203) 238-0771.

General Practice — Southern Connecticut (Darien) within striking distance of either New Haven or New York on Long Island Sound is in need of a General Practitioner. A suite of offices with five rooms, two girls who are familiar with the practice who will be willing to stay and introduce the newcomer, and an apartment above containing six rooms that could be used as living quarters. The practice consists of no obstetrics and no surgery; and in the area admission privileges at hospitals are easy to obtain. For further information contact: James V. Macgregor, M.D., 2 Queen Lane, Darien, Connecticut 06820.

General Practitioner Preferred—Staff position(s) with company in Hartford area. Advisory in nature. Non-diagnostic. Non-clinical. Connecticut license required. 20-25K range. Contact William A. Larson (203) 547-0900.

Internist—A third internist is needed to join two other internists in the town of Manchester. Office located across the street from a 300 bed community hospital which is currently in the second of a three stage building program. Manchester is located fifteen minutes from Hartford, one hour from New Haven, one hour and a half from Boston and two hours from New York City. For further information contact: Harold J. Lehmus, M.D., or David L. Warren, M.D., 56 Haynes Street, Manchester, Connecticut 06040. Telephone 203-646-1167.

Internist or Generalist for full time position as staff physician to run 25-bed unit in 98-bed rehabilitation hospital in Connecticut. Full time staff includes psychiatrists and internists. Salary range, \$26,500-\$32,500, depending upon qualifications and experience. One month vacation and other benefits. Box 400, Wallingford, Connecticut 06492.

Staff Physician—Full time staff physician wanted for the Masonic Home and Hospital, Wallingford, Connecticut. A geriatric and chronic disease hospital, fully licensed and accredited. Excellent salary, a quiet life, good research possibilities. Connecticut license required. Contact Kurt S. Pelz, M.D., Executive Director or Ulrich K. Rathey, M.D., Medical Director at the Masonic Home and Hospital. (203) 265-0931.

Pediatrician: Seven Pediatricians in Manchester urgently need board certified or eligible Pediatrician to replace Doctor leaving for further training. Excellent coverage arrangement, ample time off. Contact Winfield H. Moyer, M.D., 36 Haynes St., Manchester, Conn., 203-646-0313.

Connecticut—Psychiatrists and Physicians to work in one of several newly developed specialized programs—drug dependence, alcoholism, geriatric rehabilitation, and general psychiatry. The setting is dynamic, decentralized and community-oriented. A training hospital with University affiliations with Wesleyan and Yale. Opportunity for private practice or consultation. Salary commensurate with experience and training. Starting salary range: Psychiatrist \$20,465-\$29,479; Physician \$18,826-\$27,482. Liberal benefits. Eligibility for Connecticut license required. Send all particulars in first letter including references to: Mehadin K. Arafah, M.D., Superintendent, Connecticut Valley Hospital, Box 351, Middletown, Connecticut.

Radiologist — Increasing staff. New department with nine fully equipped rooms after January 1, 1972. General hospital 375 beds fully accredited find location seashore city. Board certified or eligible in both radiology and nuclear medicine. Full time position. Remuneration open. For further information write: Fred J. Fagan, M.D., Director, Department of Radiology, Lawrence and Memorial Hospital, Montauk Avenue, New London, Connecticut 06320.

ANYONE INTERESTED IN THE ABOVE IS ASKED TO CONTACT THE PHYSICIANS PLACEMENT SERVICE, 160 ST. RONAN STREET, NEW HAVEN, CONNECTICUT 06511.

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Chest Thump For Reverting Ventricular Tachycardia

(*New Engl. Jr. Med.*: 283, 1192, November 26, 1970 Pennington, J. E., Taylor, J., Lown, B.) A sharp precordial thump was employed to terminate 12 episodes of ventricular tachycardia in 5 patients with coronary heart disease.

A precordial thump through electromechanical transduction provides a low energy current that depolarizes a re-entry pathway, the probable bases for most cases of clinical V.T. Analysis of cardioversion energies for V.T. has demonstrated that 93 percent of episodes are reversed with energies of 10 W sec. or less.

Chest thump is an important maneuver for treating cardiac arrest initiated by V.T.—L.H.N.

Electrocardiogram of the Month: Pulmonary Emphysema

Yale-New Haven Hospital
New Haven, Connecticut

Prepared by
HYMAN M. CHERNOFF, M.D.
Associate Professor of Clinical Medicine,
Yale School of Medicine
Director, Dept. of Electrocardiography
Memorial Unit, Yale-New Haven Hospital

In pulmonary emphysema the lungs lose their elasticity and become overexpanded, the diaphragm descends bringing the heart downward and into a more vertical position. The pressure in the pulmonary artery rises causing dilatation of the right atrium and progressive hypertrophy of the right ventricle. The descent of the diaphragm and dilatation and hypertrophy of the right ventricle causes rotation of the heart with the right ventricle lying anteriorly and the left ventricle more posteriorly.

Each of these pathophysiological changes may result in changes of the P-QRST patterns in the scalar leads.

A—Overinflation of the lungs reduces electrical conductance and may cause low amplitude of the QRS complexes.

B—The increased pressure in the pulmonary artery causes dilatation of the right atrium and results in tall symmetrical P-waves in leads 2, 3, and aVF which frequently exceeds 2.5 mm. in amplitude (the so-called P-pulmonale). The P-wave in lead aVL becomes inverted and the mean frontal P-axis may deviate to plus 70 to 90 degrees as compared with plus 40 to 60 degrees normally.

C—The mean frontal QRS axis shifts rightward and prominent S-waves appear in lead I and aVL. There are times when there develops the so-called S-1, S-2, S-3 pattern (equaphasic complexes in all the limb leads) in which the mean frontal QRS axis is indeterminate. This is explained by some as due to rotation of the heart with the left ventricle pointing posteriorly and by others as due to altered conductivity through emphysematous lungs enveloping the heart.

D—In about 10% of patients with advanced emphysema one finds a marked deviation leftward of the mean frontal QRS axis simulating the patterns produced by impaired conduction of the cardiac impulse

through the anterior division of the left bundle branch (left anterior hemiblock). This is thought to be due to altered pathway of conductance of the heart currents to the limb electrodes through the overinflated lungs rather than to any disturbance in the I-V conducting system.

E—The QRS complexes in the precordial leads frequently show poor progression of R from leads V1 to V6 or QS complexes in V1-V4 simulating antero-septal infarction. These findings are probably due to the low position of the diaphragm. The usual spots from which these chest leads are recorded are now nearer to the base of the heart and great vessels rather than over the right and left ventricular muscle mass. However, if these leads are recorded from the 6th intercostal space or lower, R-waves will appear and thus rule out myocardial infarction.

F—The T-waves in leads V1-V4 may be found inverted in patients who have developed right ventricular hypertrophy and "strain" secondary to the pulmonary hypertension. As emphysema progresses, chronic cor-pulmonale with right ventricular hypertrophy may be recognized by tall R-waves in lead V1 and prominent S-waves in lead V6.

The combined findings in an ECG of low amplitude QRS complexes, a rightward mean frontal P-axis, and a rightward or marked leftward mean frontal QRS axis, should alert the electrocardiographer to the probable presence of pulmonary emphysema. When emphysema is complicated by the presence of coronary artery disease or hypertension the ECG findings may not be too definitive for emphysema alone.

Below are a number of tracings in a group of patients with symptomatic emphysema illustrating the various effects of emphysema on the ECG as discussed above.

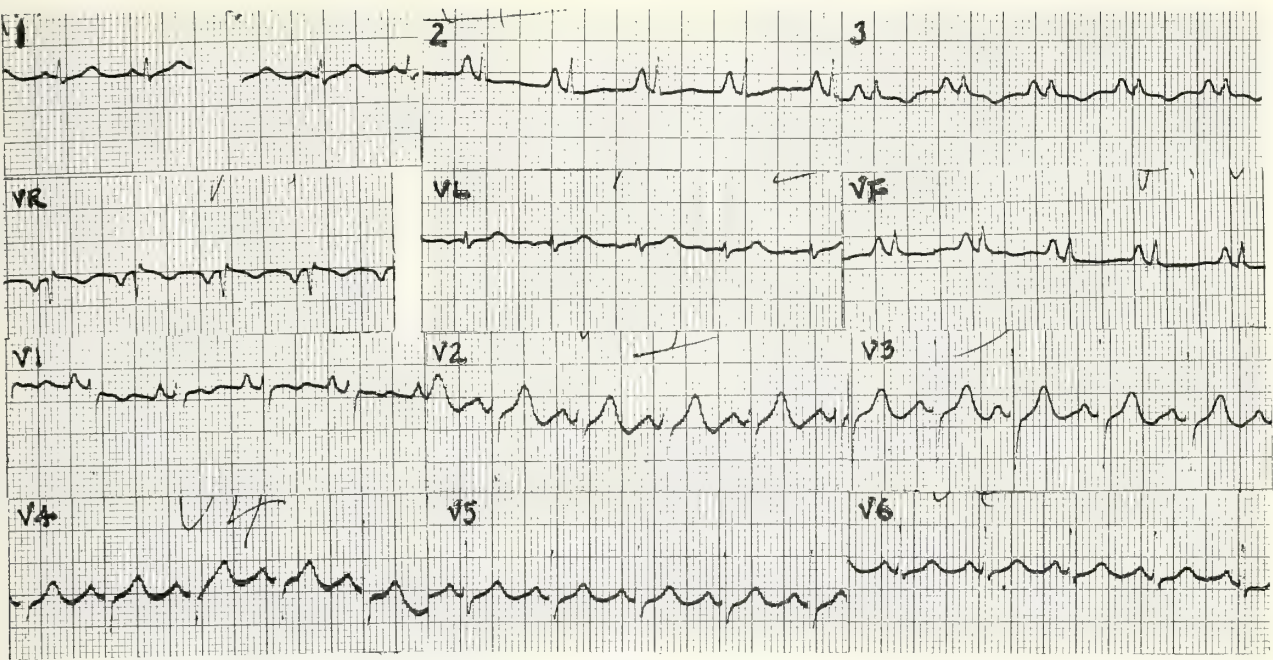


Figure 1

The amplitude of QRS is low in all leads. The P-waves are tall and symmetrical in leads 2,3, and aVF (measuring 3 mm. in lead 2) and inverted in lead aVL. The mean frontal P-axis is at approximately plus 70 degrees. The mean frontal QRS axis is at approximately plus 70 degrees.

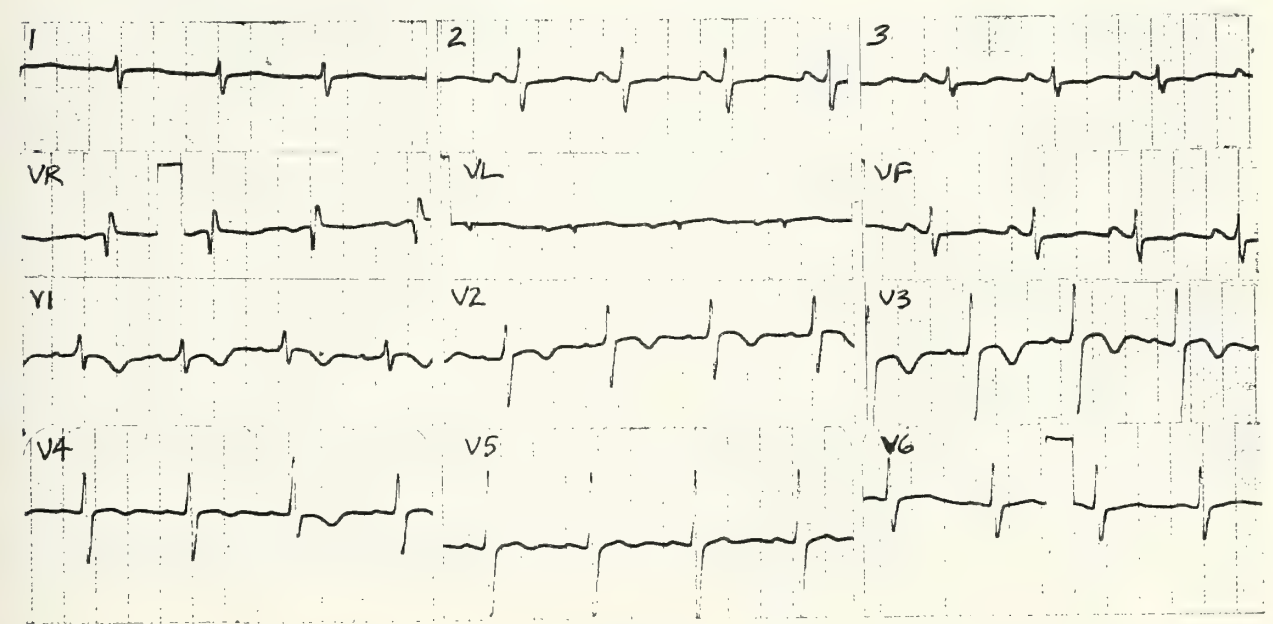


Figure 2

The amplitude of QRS is moderately low in all leads. The mean frontal P-axis is at approximately plus 80 degrees. Equiphase RS complexes are present in leads 1,2, and 3 (the S-1,S-2, S-3 syndrome). The mean frontal QRS axis is indeterminate. The T-waves are inverted in leads V1,V2,V3, and V4.

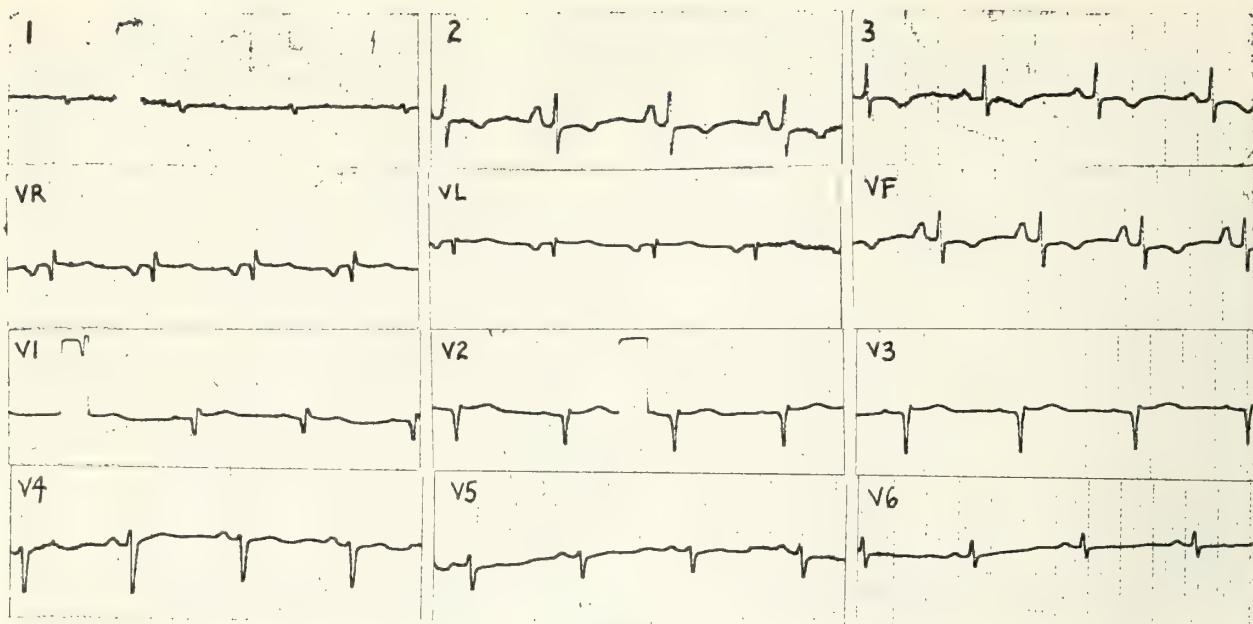


Figure 3

The amplitude of QRS is low in all leads. P-2 and P-aVF are prominent with P-2 measuring 2.5 mm. The mean frontal P-axis is about plus 80 degrees. S-1, S-2, S-3 patterns are present. There is absence of initial positive deflections in the QRS complexes in leads V1,V2,V3, and tiny r-waves in V4 and V5.

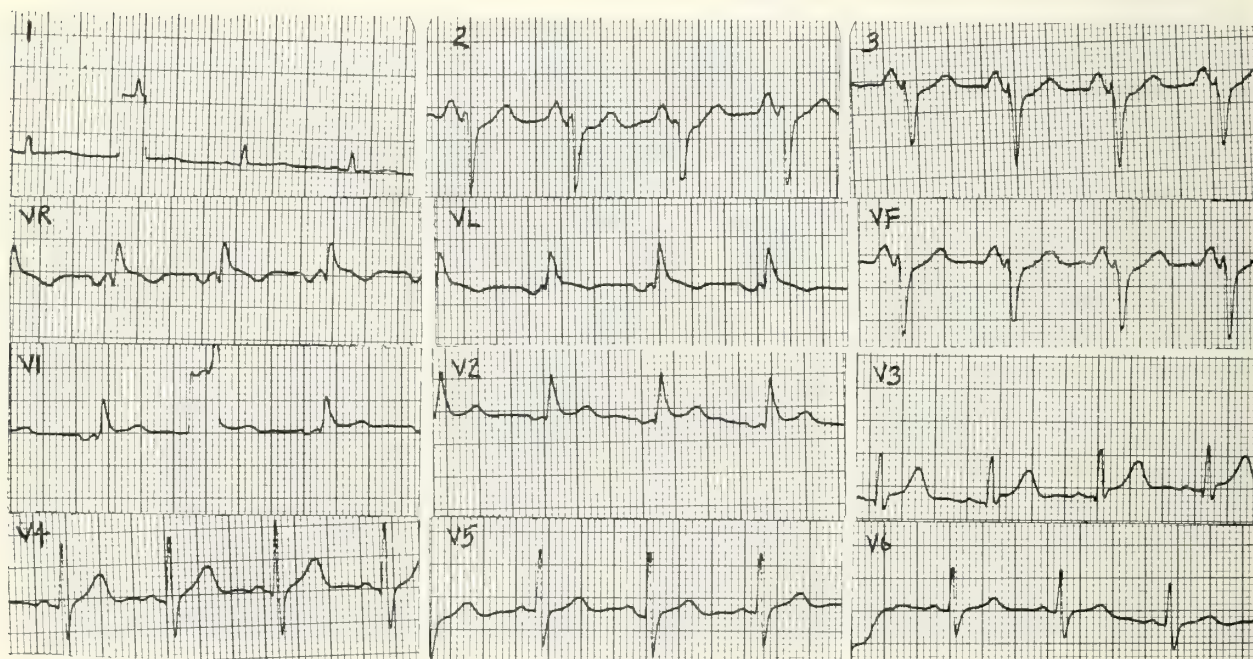


Figure 4

The amplitude of QRS is low in the chest leads. Prominent P-waves are present in leads, 2,3, and aVF and P-aVL is inverted. The mean frontal P-axis is at approximately plus 80 degrees. The mean frontal QRS axis is at approximately minus 75 degrees. Leads V1 and V2 exhibit qR complexes and there is a prominent S-wave in lead V6, findings consistent with presence of right ventricular hypertrophy:

OBITUARIES

**Denis S. O'Connor, M.D.
1893-1971**

Dr. Denis S. O'Connor was born in Biddeford, Maine on July 31, 1893, son of the late Maurice L. and Hanorah M. O'Connor. He studied at the University of Maine and Bowdoin College and received his degree of Doctor of Medicine from Bowdoin Medical School in 1919.



After serving his internship at Waterbury Hospital, he became assistant to Dr. A. A. Crane of Waterbury in the practice of industrial surgery. In 1924 he enrolled at Harvard Medical School for graduate study in orthopedic surgery. He served as a resident in orthopedic surgery at the Massachusetts General Hospital, the Children's Hospital, and the Hospital School for Crippled Children.

He returned to private practice in Waterbury as an orthopedic surgeon and in 1928 he became instructor in orthopedic surgery at the Yale Medical School. In 1936 he resumed private practice in New Haven while retaining his association with the Yale Medical School. In 1941 he was appointed chief of orthopedic surgery in Grace Hospital, succeeding the late Dr. Carl Henze.

Until his retirement in 1962, owing to ill health, he also held positions at St. Raphael's Hospital, New Haven Hospital and the Connecticut Veterans Hospital.

In 1958 Dr. O'Connor accepted the position of Managing Editor of *Connecticut Medicine* and continued until 1962. He became Councilor-at-Large of the Connecticut State Medical Society in 1962 and was Secretary of the Society from 1964 to 1965. He was the author of many scientific articles.

Dr. O'Connor was a member of the New Haven City Medical Society, the New Haven County Medical Society, The Connecticut State Medical Society and the American Medical Association.

He was a fellow of the Academy of Orthopedic Surgery, a fellow of the American College of Surgeons and was a member of the American Rheumatism and Arthritis Association, the Medical and Scientific Committee of the Rheumatism Society, the Newington Children's Hospital Alumni Association, and the Bowdoin Club of Connecticut of which he was a past president. He was also a member of the Yale Faculty Club, Mory's, Racebrook Country Club and the Yale Club of New Haven.

He was a consultant in orthopedics at Yale-New Haven Hospital, St. Raphael's Hospital, Waterbury Hospital, Meriden Hospital, Stamford Hospital, Laurel Heights Hospital, and the Children's Center, St. Charles Hospital, Jefferson, Long Island, New York.

Dr. O'Connor's Naval service began in World War I as a hospital apprentice. Although laid low by the "flu" he recovered and did outstanding duty caring for the many military and civilian casualties. Continuing his Naval contact between the Wars he brought to this extreme devotion and dedication, serving in New Zealand and Sampson, New York, as well as many other stations, being finally retired with the rank of Captain in 1953.

He was very interested in rehabilitation and served in many capacities with the American Legion Rehabilitation Committees.

It is with deep regret that we note his passing on May 29, 1971.

He leaves his wife, Lillian Hodson O'Connor and two sisters, Miss Mary O'Connor and Miss Esther O'Connor.

Samuel B. Rentsch, M.D.

Michael J. Carpinella, M.D.
1907-1971

Dr. Michael Carpinella passed away suddenly at his home, 48 Kirkham Avenue, Branford, Connecticut June 6, 1971 while relaxing in his library.

Dr. Carpinella was a native of New Haven where he was born April 13, 1907. He received his early education in local schools. He was graduated from Yale University in 1928 with a B.S. degree, receiving his M.D. from Rochester School of Medicine in 1932. He served his internship at the Grace Hospital in 1932 and 1933 and began the practice of medicine in Branford, Connecticut in 1934.

Since his internship he served on the staff of Grace hospital and Yale New Haven Hospital where he held the rank of associate clinical professor of medicine. He was the Director of Health for the town of Branford, on the Board of Directors of the Branford Visiting Nurse Association and a member of the Board of Finance for the town of Branford.

He was a member of the New Haven Medical Association, Connecticut State Medical Society and the American Medical Association.

Dr. Carpinella is survived by his wife Minna Cook Carpinella, a daughter Mrs. Robert Eppes of Cleveland, Ohio; three granddaughters and a sister Mrs. Anthony Caparossi of New Haven.

Dr. Carpinella was an unassuming, industrious and conscientious physician admired by his patients to whom he was loyal and willing to serve. In addition to his full schedule including his civic and medical obligations he found time to enjoy a game of golf and occasionally time to travel.

The loss of such a man is felt in many ways. The community which he served as not only physician but as Director of Health feels the loss and emptiness of both his professional skill and friendship. The colleagues with whom he shared both his knowledge as professional and confidence as friend find their ranks weakened by his death.

He has left with both his patients and fellow physicians a memory that brings not only sadness, but a sense of pride which grows from deep friendship and admiration.

Vincent Balletto, M.D.

In Memoriam

Josephs, William Walter, Georgetown Medical School, 1930. Dr. Josephs was a practicing ophthalmologist and otolaryngologist in New Haven since 1931. Dr. Josephs served as a major in the U.S. Army during World War II with the 12th Evacuation Hospital in Europe. He served also in the Army Reserve with the 340th General Hospital and retired from the Army in 1966 with the rank of colonel. He was on the staff of St. Raphael's Hospital for many years and was a member of the New Haven County Medical Association and the Connecticut State Medical Society. Dr. Josephs died June 29, 1971, at the age of 65.

Redlich, Elsa A., Vienna Medical School, 1935. Dr. Redlich was a practicing psychiatrist in the New Haven area since 1944. She was a member of the New Haven County Medical Association and the Connecticut State Medical Society. Dr. Redlich died December 29, 1970, at the age of 65.

Smith, C. Seaver, Hahnemann Medical School, 1916. Dr. Seaver was a practicing physician in the New Haven area since 1917. While serving with the Army Medical Corps during World War I, he attained the rank of captain. During World War II, he was attached to the 316th Cavalry as surgeon and served also as the Chief of Surgical Service at the Station Hospital in Fort Devens, Mass. He was a member of numerous medical associations including the New Haven County Medical Association, the Connecticut State Medical Society, and the American Medical Association. He died June 25, 1971, at the age of 82.

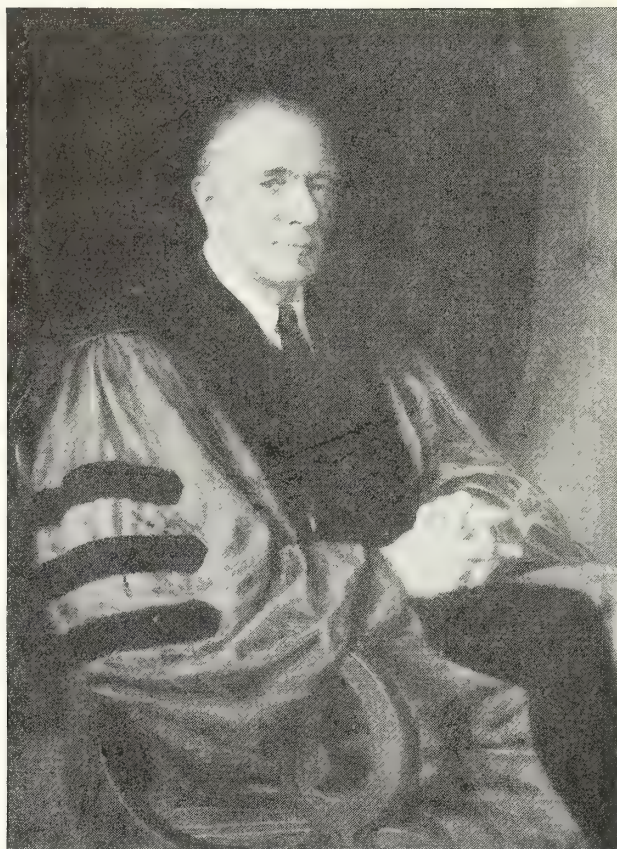
Voris, Jacques, Columbia College of Physicians and Surgeons. Dr. Voris was a general practitioner in the Fairfield area since 1942. He was a member of the American Academy of General Practitioners, the Fairfield County Medical Association, the Connecticut State Medical Society and the American Medical Association. He died May 20, 1971, at the age of 59.

Dean Vernon W. Lippard's Portrait Presented to Yale Medical School

Morton Kligerman, M.D.

The important things I want to say about Dean Lippard are not in a recounting of his curriculum vitae. However, except for our relationship to Yale Medical School we are a mixed group here today and I am sure that many would want to relate the past to the man whom we are honoring. Vernon Lippard graduated from Yale's Sheffield Scientific School and from Yale Medical School. Following a pediatric internship at the New Haven Hospital he studied pediatrics at Cornell and became the first chief resident of Pediatrics after the New York Hospital was opened. At this period during which Dr. Lippard was a full-time member of the pediatric staff at Cornell and a private practitioner of pediatric medicine, he joined Dean Willard Rappleye's staff at the College of Physicians and Surgeons as assistant dean. This was 1939. Three years later, now as associate dean, he joined the Army of the United States and served in the Southwest Pacific. In 1946, soon after his return to Columbia, he became dean of Louisiana State University School of Medicine. Three years later he accepted the deanship at the University of Virginia School of Medicine where he stayed until 1952 at which point Dr. Lippard returned to Yale as Dean of our School of Medicine.

In the fifteen years that Dr. Lippard guided our school he effected a major revision and expansion of every department and created one new one—the Department of Radiology. This intellectual strengthening was matched by an unprecedented bricks and mortar development. When I stopped counting, and that was before Dean Lippard relinquished his post in 1967, over \$19,000,000 had been raised. This averages out to something in the order of 1-1/3 million dollars a year! These funds not only served to improve our teaching and research program at Yale, but much was directly responsible for improvement in patient care services to the community we serve. Looking forward to our national service needs, however, a marked increase in the enrollment of medical students was affected. During this period Dean Lippard was a member of many national and international committees. In fact, during the years that Dr. Lippard



was my dean it seemed to me difficult for many major long-range medical plans to be accomplished, new medical schools organized, or old ones reorganized without the official or unofficial advice of the dean of Yale University's School of Medicine.

In the last four years the man who graduated from Yale Medical School A.O.A., and was a student editor of the *Yale Journal of Biology and Medicine*, has been assistant to President Brewster for medical development. However, with more time available than in former years he has been able to accept consultations requested by many medical schools and state governments. He has furnished critiques or established plans for medical schools and health care services in many foreign countries. In the last three years he has worked half-time for the Josiah Macy, Jr. Foundation be-

cause this group interests itself solely in supporting medical education.

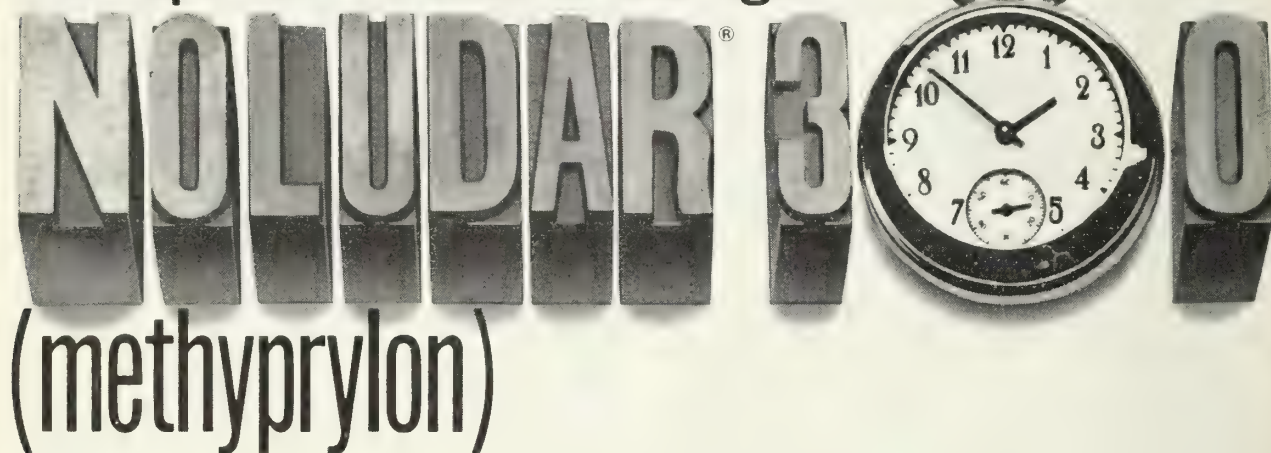
This is the briefest sketch of the professional life of Dean Lippard to this moment. As you have already guessed, many more productive professional moments are still to come.

I would now like to say a few words, because I fear I will not be able to speak very long, about Dr. Vernon W. Lippard as dean. The most important quality of a dean is that he must first be a man. Today, we are honoring a grand man. Vernon Lippard is first of all a very modern man, an avant garde man, but this easily and naturally carried in the form of an old fashioned gentleman. Here we have a man who shows consideration for others, and is a delightful blend of kindness, understanding, patience, honesty and a great sense of humor. He is one with a large number of avocations. He is a sailor, and we all know that only

nice people are sailors, and a tennis player. His interest in painting is active as well as passive. I am pleased to have on my walls a small water color taken from his sketch book when he served his country in the South Pacific. To these essential qualities Dean Lippard brought much ingenuity to his desk. As a dean, he was forward looking, decisive, strong and uncommonly fair to all parties. He is a man. It was not necessary to legislate democracy in our school. Dean Lippard could not have operated without it.

So, my friends, it is fitting that today through the contributions of Vernon Lippard's many, many friends on the faculty, among the student body, alumni and many others that we ask Yale University, through Mr. Holden, to receive a portrait of our friend, teacher and advisor. We would like to insist that this likeness painted by Mr. Pietro Paezati of Boston be given a prominent place in Yale's Hall of Fame.

one capsule for the rest of the night



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National President Speaks Out

During these last few months, and at present, theatres in and around Connecticut have been showing the film "Doctors' Wives". With summer, the Drive In Theatre will be featuring this movie. The film has produced much controversy among women and women's groups here and in all parts of the country. Our national president, Mrs. R. C. L. Robertson, has spoken out in our behalf and the following is her rebuttal.

The Women's Auxiliary to the American Medical Association is a volunteer organization of 90,000 doctors' wives. We are proud to be doctors' wives, proud of the work we have done and are doing to improve the health of our nation. The members of this organization truly represent the doctors' wives of America.

When Critic Julie Crist reviewed the movie, "Doctors' Wives", on the "Today" television show, she stated that if the Women's Auxiliary to the American Medical Association "does not protest (the film) it will be because they have no pride." As I wrote Miss Crist, we do emphatically protest the contents of the book and of the motion picture, "Doctors' Wives." We especially protest the all-encompassing title which accuses all wives of doctors of being morally unpleasant or offensive persons as are the characters in this work of fiction.

As wives of physicians we engage in a program to help the people of America attain and maintain good health. Our activities include health manpower recruitment, community health services, mental health services, training for safety and many other worthwhile projects.

One of the problems of health care in America is that of supply and demand. Last year the AMA's

Woman's Auxiliary raised \$500,000 to aid medical students. Over \$600,000 was made available for scholarships and loans for nursing and other health-related careers. This is our way of trying to relieve the shortage of health manpower.

Each auxiliary member is expected to accept her individual responsibility to work for the promotion of good health in her community. Not even a rough estimate can be made of the number of young people who have been trained as baby-sitters under our GEMS program which stands for "Good Emergency Mother Substitutes". The Women's Conference of the National Safety Council gave its highest award to an auxiliary for the promotion of this project. We have received a high award from the Division of Emergency Health Services of the U.S. Department of Health, Education, and Welfare for a poison control program. We are official representatives to the President's White House Conferences on Children, Youth and the Aging.

For the past three years our programs on drug abuse and smoking have been presented to thousands of students and parents. These are but a few of the things we do every day to promote positive good health.

In Connecticut, we have been a part of all these programs and if you will but look back to our past president's (Mrs. John J. Mendillo) report for 1970-71 published in the July issue of *Connecticut Medicine*, you will see exactly how much we have accomplished. We truly do not feel that the movie "Doctors' Wives" represents any of our members. We also say in a loud, clear voice, "We are proud to be doctors' wives."

Meeting Notices

The information on this "notices" page is offered as a service of all specialty groups and allied health agencies in order to publicize postgraduate educational opportunities available to subscribers. The deadline for publication in Connecticut Medicine is the tenth of the month preceding, date of issue. Send copy to: Connecticut State Medical Society, 160 St. Ronan Street, New Haven, Connecticut 06511.

GENERAL

April 25-27—Tuesday-Thursday
180th Annual Meeting of the
Connecticut State Medical Society

The Hartford Hilton, Hartford

September 6-10—Monday-Friday

Organ Failure—Lung, Heart, Kidney, Blood, Liver

Dalhousie University Faculty of Medicine

Halifax, Nova Scotia

Contact: American College of Physicians and Royal
College of Physicians and Surgeons of Canada,
4200 Pine Street, Philadelphia, Pennsylvania
19104.

September 7, 1971-May 23, 1972

Lecture Series—Each Tuesday

Basic Sciences As Related to Clinical Medicine:

Infectious Disease, Coronary Care Problems,

Diagnosis and Treatment of Tumors

Lawrence and Memorial Hospitals

New London, Connecticut

Contact: Edward Gipstein, M.D.

September 30-October 22—Thursday-Saturday

**Thirteenth National Conference on Physicians
and Schools**

LaSalle Hotel, Chicago, Illinois

DRUG ABUSE

September 27, October 7 and October 21

Three Lectures

Meriden-Wallingford Medical Society

Speakers and Topics: James O'Brien, M.D., Ph.D.,

Emergency Aspects of Drug Abuse. Herbert D.

Kleber, M.D., Methods of Treatment. Former

Drug Addicts Reflect on Treatment.

ELECTROENCEPHALOGRAPHY

September 13-15—Monday-Wednesday

Clinical Electroencephalography

Minneapolis, Minnesota

Contact: American EEG Society, Dr. D. W. Klass,
Mayo Clinic, Rochester, Minnesota 55901.

OTOLARYNGOLOGY

October 4-9—Monday-Saturday

**Postgraduate Course in Laryngology and
Bronchoesophagology**

Department of Otolaryngology

Abraham Lincoln School of Medicine

University of Illinois, P.O. Box 6998

Chicago, Illinois 60680

October 8-9—Friday-Saturday

**Postgraduate Course in Otolaryngology for the
Family Physician—AAFP—9 hours**

University of Miami School of Medicine

Miami, Florida 33152

October 23-29—Saturday-Friday

Annual Otolaryngologic Assembly of 1971

University of Illinois Hospital Eye and Ear In-
firmmary, Chicago

Contact: Otolaryngology, P.O. Box 6998, Chicago,
Illinois 60680

PEDIATRICS

November 10—Wednesday

Annual Pediatric Symposium

"The Newborn with Jaundice"

Lawrence M. Gartner, M.D., Albert Einstein Col-
lege of Medicine, New York City

St. Francis Hospital, Hartford, Connecticut

Contact: William E. Hart, M.D., Director of Pedi-
atrics.

1971 COUNTY SEMI-ANNUAL MEETINGS

September 22—Wednesday—Hartford

October 6—Wednesday—Fairfield

October 7—Thursday—New London

October 12—Tuesday—Litchfield

October 14—Thursday—Middlesex

October 19—Tuesday—Tolland

October 21—Thursday—Windham

October 27—Wednesday—New Haven

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The first page should list title, the author (or authors), degrees, hospital positions and any institutional or other credits. References should conform to the usual style of the JOURNAL (listing name and initials of author, title of article, journal, volume number, first and last pages and year), and should be cited numerically in the order in which they appear in the text; the number should be limited to the absolute minimum.

LENGTH OF ARTICLES

Ordinary articles should not exceed 3,000 words (approximately 3 printed pages). Under exceptional circumstances only will articles of more than 4,000 words be published.

ILLUSTRATIONS

Illustrations should be numbered consecutively and indicated in the text. The number, indication of the top, and the author's name should be attached to the back of each illustration. Legend should be typed, numbered, and attached to each illustration as well as typed on a separate sheet. Photographs should be clear and distinct; drawings should be made in black ink (preferably India ink) on white paper. For half tones, glossy photographs should be submitted. CONNECTICUT MEDICINE will bear the cost of printing two cuts accompanying manuscripts submitted for publication. The cost of printing more than two cuts must be borne by the author.

NEWS

Our readers are requested to send in items of news, also marked copies of newspapers containing matter of interest to physicians. Letters intended for publication should be marked "For Publication." We shall be glad to know the name of the sender in every instance. All copy should be received one month prior to the expected date of publication.

ADVERTISING

All advertising copy of products approved by the Advertising Committee of the State Medical Journal Advertising Bureau of Chicago shall be accepted for publication unless such copy is in conflict with official policies of the Connecticut State Medical Society. Non-Bureau advertisements in this issue have been reviewed and found to comply with the principles of advertising of the State Medical Journal Advertising Bureau, Inc. The acceptance of advertisements does not necessarily imply endorsement of any product or service by CONNECTICUT MEDICINE.

Material other than original articles should be received not later than the 10th of the month PRECEDING date of issue.

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Reprint orders should be returned at once as the type will be destroyed immediately following publication of the manuscript. The JOURNAL does not stock reprints of the articles published. Requests for individual reprints should be sent to the author.

Communications should be addressed to Louis H. Nahum, M.D., Editor, CONNECTICUT MEDICINE, 160 St. Ronan Street, New Haven, Conn. 06511. Telephone 865-0587.

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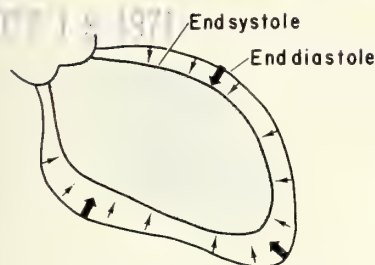
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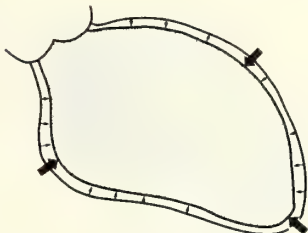
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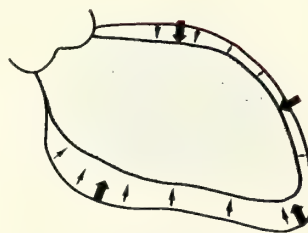


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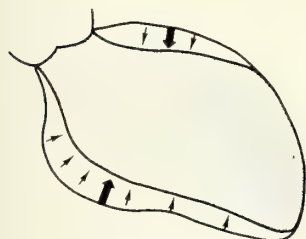
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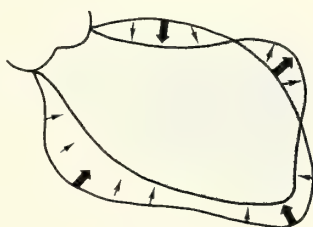
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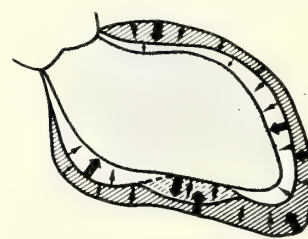


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(Paradox. Syst. Expans.)

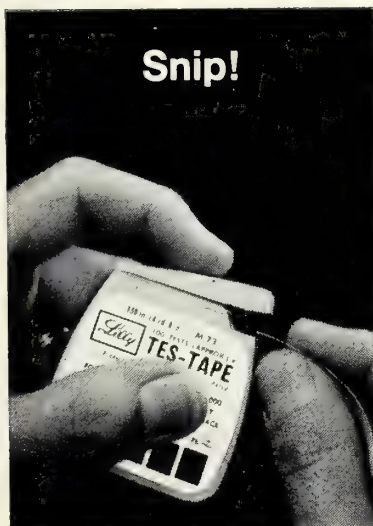


ASYNCHRONY

Phase 1 Phase 2

Localized Disorders In Myocardial Contraction.

Herman, M. V. Heinle, R. A., Klein, M. D., Gorlin, R.: *New Eng. J. Med.* 277:222-232, 1967.



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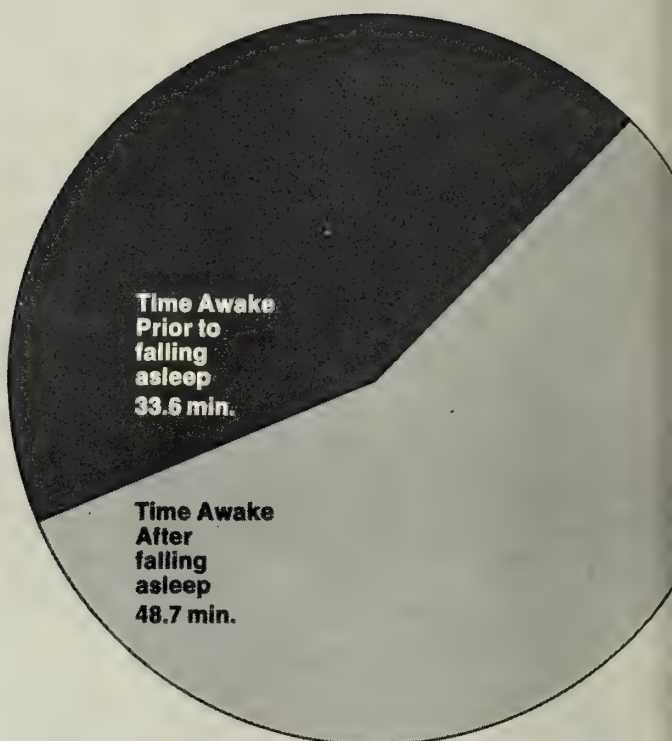
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References: 1. Frost, J. D., Jr.: "A System for Automatically Analyzing Sleep," Scientific Exhibit presented at Clinical Convention, A.M.A., Boston, Nov. 29-Dec. 2, 1970, and Aerospace M.A., Houston, April 26-29, 1971.

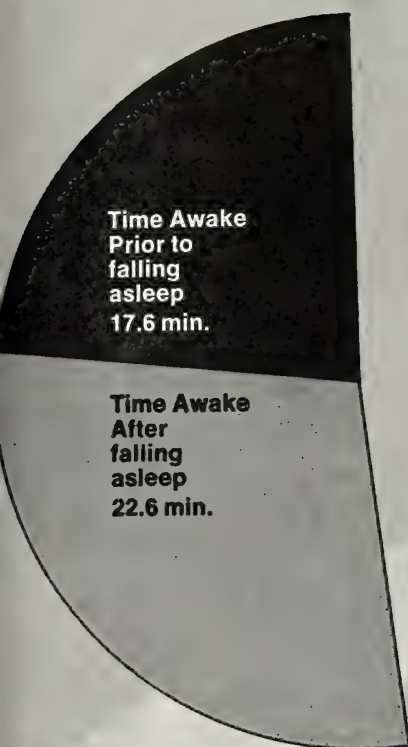
2. Data on file, Medical Department, Hoffmann-La Roche Inc., Nutley, N.J.

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Subscription rate for non-members \$15.00; Student-Members, interns and residents \$7.50; single copy \$1.50.

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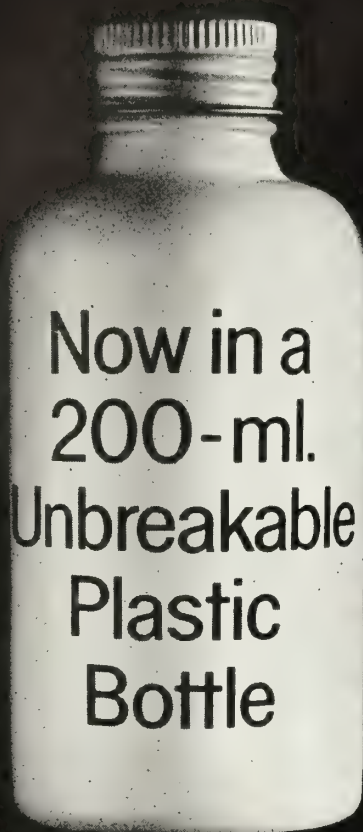
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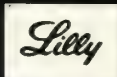
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PRESIDENT'S PAGE

In light of the generally turbulent and chaotic atmosphere that prevailed in Hartford all during the regular session of the 1971 General Assembly, your President has invited the Chairman of the Society's Committee on State Legislation, Dr. Isadore H. Friedberg, of Newington, to share with the membership his evaluation of how Medicine fared this year and what the prospects are for the future.

Nothing seems more exasperating, illogical, unpredictable, wasteful, frustrating, and yet magnetic than the legislative process. To session after session, year after year, representatives of the State Medical Society trudge up to the Capitol with bulging portfolios to present logical, scientific and cogent arguments in support of or opposition to legislation which concerns either the physician or the general public in matters pertaining to health or the provision of health care. And at each succeeding session of the General Assembly, the legislators appear to pay less and less attention to the testimony given at public hearings. Often, in cavalier fashion, legislative chairmen brush aside cogency for political expediency or to gain personal popularity, and they frequently do this with brusqueness, discourtesy, impatience and even overt hostility. There exists a chasm or void separating the State Medical Society and the legislative process which seems infinitely vast and deep and to have no bridge across it to make possible the sharing of problems or the gaining of mutual understanding.

We have cause to feel that most legislators are suspicious of most of what we say—and discount our sincerely given views as hypocritical, devious or downright fraudulent. We, in turn, have good reason to feel that many of them are capricious, superficial, uninformed and generally unwilling to listen with open minds to valid arguments and factual data.

Of course the above is somewhat of an oversimplification, but less of an oversimplification than the detached medical observer might believe. The obvious agony with which legislation is born is convincing indeed of the intent of the majority of legislators to do their job ably and conscientiously. They certainly labor long and hard, even though it is inherent in the system that major problems must be dealt with hastily and from positions of prejudgment. Our principal complaint is directed to the unwillingness of so many on Capitol Hill to recognize our expertise and to accept the fact that we speak with sincerity. It is our seeming inability to communicate our sincerity of purpose that makes for continued and increasing frustration.

Working within this framework we are obliged to balance our successes and failures accordingly. It may be said that, at this session, we were more successful than usual in securing the passage of Society-sponsored legislation that dealt primarily with the provision of health services and the functioning of

committees in the hospital structure. We were able to play a very active part in maintaining the incumbent Commissioners of Health and Mental Health in their positions. We also achieved success, both as an organization and as individual physicians, in frustrating the attempt of the bureaucrats to gain complete control over hospital charges, services and even planning.

However, when we crossed swords with paramedical groups we met with uniformly stinging defeat. The chiropractors, podiatrists and optometrists won victories that were fundamental in broadening their economic base. We failed to secure passage of a bill on physicians' assistants that was consistent with the Society's position. It is cause for amazement—almost to the point of disbelief—that these numerically small groups were able to secure passage of practically all of their self-interest legislation at this session in spite of our continued aggressive opposition. Never in the past decade has our Society waged a more effective program in terms of preparation, staff work, cooperation at the local level, and eyeball-to-eyeball lobbying by our legislative agent, our leadership and our rank and file. Despite these noble efforts, there is no question but that this area of our legislative thrust turned out to be one of disaster. Our ineffectiveness here leaves no doubt that our techniques, scope, organization, emphasis, and expenditures need considerable critical evaluation before the next go-round. Part of the leadership feels that we need only to work harder with the same tools. Others feel that our traditional techniques have become unproductive and that new approaches must be explored. There is even strong feeling by some that our legislative postures on socio-economic matters are so prone to prejudicial prejudgment as to make any action in these areas fruitless and wasteful. How to chart a new course for our reeling ship to guide us through the seas of political expediency in the future is the pressing responsibility of the Legislative Committee and the Public Affairs Division to determine.

Isadore H. Friedberg, M.D.

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Traditions and Trends in Nursing

Gordon K. MacLeod, M.D.

Summary

With an eye to ensuring that the current changes in the nursing profession proceed in an orderly fashion, it seems appropriate to consider its traditions and trends. The fundamental tradition of the nursing profession has been its ongoing commitment to the service of mankind. The most significant trend is the evolution of the nurse's role from a bedside attendant to a new role in which the clinical nurse practitioner assumes increasing responsibility and independence. Thoughtful reflection on both traditions and trends will help to ensure the heritage of nursing and will provide a foundation for rational change.

As a result of changes now occurring in the medical world, the graduating nurse is presented with opportunities never before available. Some will choose to practice their profession intermittently or simultaneously with their domestic lives as housewives and homemakers. Others will become career professional nurses with rich and rewarding lifetimes of experience. Still others will make unique contributions to the design of the changing scene in the nursing profession. As the profession changes—always aiming toward better medical care—nurses should preserve a special tolerance for *orderly* change.

This kind of orderly change gives rise to the title, "Traditions and Trends in Nursing." Traditions and trends are at least partially separable by setting some rough limits on the number of years in each category. The definition of traditions as used here are those patterns of behavior which have weathered the storms of time—say, for at least 25 years and perhaps for more than 50 years. Trends on the other hand, are patterns of behavior which have not withstood the test of time. Though certain trends may last for many years, even for a decade or two, not until they have survived for at least 25 or 50 years, should they be graced with the word, tradition. This is not to suggest that traditions cannot fade away, but it should be recognized that

they are very difficult to change. Trends, on the contrary, appear and disappear and, for the most part, are amenable to change.

It is almost gratuitous to say that everyone should know the heritage of his or her respective profession and everyone should aspire to live up to its historical commitments. This article lists some nursing traditions and then some trends, and relates how they affect the changes now underway in the profession.

Margaret Arnstein, Dean of the Yale School of Nursing, has written that the word, probationer, is found in the writings of Florence Nightingale, dating back to the days of the first training school in the middle part of the 19th century. It was then deemed necessary for a young woman to establish her character in a setting not unlike that of a convent. Those young women were permitted a precise amount of time for exercise each day. They were never allowed to leave the dormitory alone. All other time was rigidly scheduled—meals, work, learning and sleep.¹ And it seems fair to say that some of the present generation of student nurses have felt that their training was in that traditional mode; though, on close inspection, most aspects of this tradition have faded away. However, it is important to add that Florence Nightingale was remarkably innovative and probably would have endorsed and encouraged the changes that have taken place.

Another important tradition, going back 100 years or so, is the principle of a nurse-in-charge. We have come to recognize that it is important for nurses to pursue their own interests but it is equally important to assume responsibility for the work of others assigned to their charge. In this way, the effectiveness of the nurse can reach far beyond her own training and skill in applying the principles of the nurse-patient relationship.

Florence Nightingale was responsible for the first nursing school as well as for developing the principle of the charge nurse. Another tradition which she attempted to promote is that "the nurse should never be obliged to quit her floor except for her own dinner and supper."¹ Though the principle is sound, a certain erosion has taken place, with nurses being asked to carry X-rays, to run errands

DR. GORDON K. MACLEOD, Associate Clinical Professor of Medicine and Public Health, Yale University School of Medicine, New Haven, Conn.

or to accompany patients to other parts of the hospital, thus sometimes leaving the floor uncovered.

Another of Florence Nightingale's important contributions has been rediscovered and that is the training of nurses through the case-study method. In this regard, it was she who said that "Training is to teach not only what is to be done . . . not only how to do it, but *why* such and such a thing is done, and not such and such another. . . ."1

So much for nursing traditions, some of which are still strongly influencing nursing training and others of which are gradually fading away. Of interest would be a brief review of trends and an inspection of those patterns of nursing and nursing training which have come and gone over the past 25 to 50 years.

Nurses have evolved through several phases within the past several decades—first, as bedside attendants; next, as bedside clinicians; and, more recently, to the role of practitioners. As attendants, they were expected to obey the doctor's orders intelligently and perfectly. As bedside clinicians, they began to share limited responsibility for patient care with the doctor. As practitioners, nurses are assuming an ever increasing independence of action and responsibility for patient care both inside and outside the hospital and this, no doubt, will continue.

When the nurse's services were delimited to bedside attendance, her time was spent mainly in doing such tasks as giving backrubs, making beds and serving trays. This, of course, was in harmony with the medical knowledge of the period and, in fact, is something of an oversimplification of the nurse's past role. Suffice it to say, however, that if nursing functions were still limited to this general area, the present curriculum for nursing training would be vastly different. This servile pattern of behavior has been part trend and part tradition. Of course, bedside attendance is absolutely necessary for patient

care and we must continue to teach it to nurses and others though many aspects of it have not passed the test of time as we now define nursing.

As the nurses's responsibility increased with changes in philosophy, technology and manpower, she came to participate directly more and more in the process of patient care within the hospital setting. She became the prodder, the stimulator, the coaxer in several areas—for example, with the post-operative patient on the surgical services who may need to be encouraged to cough even though it is painful. Another example is the nurse on the obstetrical service who was trained to become involved in the early stages of labor, and, not uncommonly, found herself delivering the baby before an obstetrician arrived. She then worked with the new mother to get her back on her feet, preparing her to leave the hospital and to return home. Still another example is the nurse on the intensive care unit who became involved in diagnostic evaluation as well as in management of patients. In some instances, she acquired greater familiarity and expertise with electronic equipment than many a physician.

It is not difficult to follow the evolutionary thread that is being unraveled in this paper. The next step, which is in the early development phase in the nursing profession, is that of the practitioner, the clinical nurse specialist, the nurse clinician—call her what you will. The nurse, functioning independently as a practitioner or as a physician's assistant with appropriate supervision and guidance, is obviously following a current trend but, more importantly, she may be evolving as part of a new tradition in nursing.

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The Hemolytic Anemias of Alcoholic Liver Disease

Morton D. Grant, M.D.

Synopsis

For a long time the concept of hypersplenism has dominated thinking in regard to the etiology of hemolysis in alcoholic liver disease. The hemolytic disorders recently identified in these patients have given rise to newer understanding in this area.

Introduction

The typical anemia seen in Laennec's cirrhosis results from a complex interplay of a moderately shortened red cell survival associated with chronic blood loss, folate deficiency, inadequate marrow response and a hypervolemic state which tends to exaggerate the degree of anemia.^{1,2} While this extremely common anemia is not primarily hemolytic in character, alcoholic liver disease provides a setting in which full-blown hemolytic anemias occur. These disorders are transient, chronic or follow a rapidly fatal course. Their etiology is found in deranged red blood cell lipid metabolism,³ morphological abnormalities in the red cells⁴⁻⁶ and splenic hyperfunction.⁷ The distinguishing features of these anemias are reviewed in this report:

1. Deranged Red Blood Cell Lipid Metabolism

Zieve⁸ described transient hyperlipidemia and hemolytic anemia in men with fatty livers or Laennec's cirrhosis, who had recently consumed large quantities of alcohol. Other symptoms included anorexia, weight loss, jaundice and abdominal pain. Discontinuance of alcohol, a hospital diet rich in protein and supplementary vitamins induced rapid regression of the symptomatology in his patients.

Hemolytic anemia, in this the Zieve syndrome, is transitory and moderate in degree. The peripheral blood smear shows a predominantly normocytic normochromic red cell population but also target cells, macrocytes and spherocytes. The bone marrow reveals normoblastic hyperplasia and sometimes striking collections of large lipid-laden histiocytes. The direct and indirect Coombs tests are usually negative.

In these patients the hyperlipidemia may be due to excessive lipid mobilization or to a reduction in the lipid clearing factors.⁸ Westerman, Balcerzak, and Heinle³ have shown that the hyperlipidemia is associated with an abnormally high concentration of red cell membrane lipids which probably contributes to increased hemolysis. As the serum lipids fall less is accumulated in the regenerating red cells and their survival time will approach normal values.³ Hemolysis and hyperlipidemia in the Zieve syndrome appear to be related manifestations of acute liver failure brought on by alcoholic abuse.

2. Acquired Morphological Abnormalities in the Red Blood Cells

Burr Cell Hemolysis in Laennec's Cirrhosis

Burr cells are extremely distorted, fragmented erythrocytes. They are seen in hemolytic disorders in which intravascular factors are considered to be responsible for the erythrocyte damage.⁶ In Laennec's cirrhosis a severe hemolytic anemia with pronounced burr cell poikilocytosis, reticulocytosis, indirect hyperbilirubinemia and thrombocytopenia may occur.⁶ In addition to the burr cells, increased numbers of erythrocytes with blunt or spiny projections (acanthroid cells) are seen in wet preparations of their blood.^{5,6} Normal red blood cells when incubated in the serum of these patients become acanthroid, thus a serum factor may occur in Laennec's cirrhosis that is capable of inducing acanthroid transformation of the red blood cells.^{5,6} Sequestration of the acanthroid cells in the spleen is thought to give rise to the burr cells.⁶ These patients have clinical and biochemical findings indicative of serious hepatic dysfunction and death has generally occurred within a few months following recognition of the hemolytic disorder.^{5,6}

Transient Hemolysis and Stomatocytosis

Erythrocytes normally have a central, unstained, circular zone of pallor. Red cells with a slit-like unstained area are referred to as stomatocytes. Douglass and Twomey⁴ described transitory hemolysis with large numbers of circulating stomatocytes

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in patients with fatty metamorphosis and periportal fibrosis of the liver who had recently been consuming large quantities of alcohol. Hemolysis was shown by a shortened survival of ^{51}Cr -labelled autologous erythrocytes even when anemia was not present. There was no evidence of significant splenic sequestration and the patients had normal serum lipid levels. The red blood cell osmotic fragility and autohemolysis test were normal thereby helping to distinguish this disorder from a congenital anemia in which stomatocytosis is a prominent feature. The relationship of stomatocytosis to alcoholic abuse in patients with pre-existent liver disease is not understood.

3. Splenic Hyperfunction

An enlarged spleen sequesters and destroys red blood cells to an abnormal degree.⁹ This is an exaggeration of normal splenic function which is referred to as hypersplenism.⁷ In the Zieve syndrome and burr cell anemia the spleen may actively remove the abnormal cells from the circulation and thereby become hyperfunctional. In Laennec's cirrhosis the spleen will sometimes enlarge secondary to portal hypertension and destroy increased numbers of normal erythrocytes.⁹ The hemolysis is an indirect consequence of the liver disease. This is probably the most important cause of hemolytic anemia in Laennec's cirrhosis.¹⁰

Summary

In the Zieve syndrome hyperlipidemia and hemolysis appear to be related manifestations of acute liver failure brought on by alcoholic abuse. A serological factor present in some patients with

Laennec's cirrhosis may cause morphological abnormalities in the red blood cells and a severe hemolytic anemia with large numbers of circulating burr cells. Transitory hemolysis with stomatocytosis has recently been described but its relationship to acute alcoholism in patients with pre-existent liver disease is not understood. Splenic enlargement secondary to portal hypertension is probably the most important cause of hemolysis in Laennec's cirrhosis.

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Essentials In The Management Of Juvenile Diabetic Ketoacidosis

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Introduction

Diabetic ketoacidosis in pediatrics occurs frequently, however, the practical literature¹⁻⁵ concerning this subject appears to be relatively unknown in light of the many requests for help in coping with this emergency. The present article is presented to summarize our therapeutic approach to this problem. The suggestions made here are quite practical and easily applied in the emergency situation.

A. Pathophysiology

Most of the manifestations of diabetic ketoacidosis are related to an insufficient amount of insulin and an increase in gluconeogenesis with a secondary block in utilization of glucose resulting in *hyperglycemia*, *glycosuria*, *osmotic diuresis*, *dehydration* and the mobilization of fat as an alternate source of energy. This last results in *ketonemia*, *ketonuria*, *acidosis* and *hyperventilation*. Frequently, but not always, there is a marked hyponatremia. In addition, glucose will be formed by the breakdown of glycogen and protein. The severity of the ketoacidosis will vary depending upon the severity of the diabetes, the duration of relative insulin deficiency, the nutritional status and the presence of an associated illness. The severely involved patient may manifest ketoacidosis with *coma*. In contrast, the patient with mild manifestations may only present with hyperglycemia and mild acidosis.

B. Therapeutic Requirements

The average patient with diabetic ketoacidosis enters the hospital having lost: 10-15% of his body weight; 100 cc water/kg; 10-13 mEq Na/kg; 6 mEq K/kg and variable amounts of PO_4 .

In order to restore homeostasis, the primary needs are:

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Supported by the Yale University Children's General Clinical Research Center NIH Grant #RR-00125.

1. *Insulin*
2. *Water and Salt*
3. *Potassium*
4. *Sodium Bicarbonate*

C. Diagnosis

The diagnosis of diabetic ketoacidosis requires the demonstration of: *hyperglycemia*, *glycosuria*, *acetonemia*, and/or *acetonuria*.

D. Differential Diagnosis

The differential diagnosis of diabetic ketoacidosis in childhood includes the following conditions:

1. *Salicylate Intoxication*—This condition is not a ketoacidotic state, although both diabetic ketoacidosis and salicylism will give a positive reaction with the ferric chloride test. (Acetone will evaporate if the test tube is heated, thus, converting the positive reaction to negative in patients with diabetic ketoacidosis).
2. *Insulin Reaction In Known Diabetic Patients*—These patients are not dehydrated or acidotic, and they do not have hyperglycemia, acetoneuria and usually do not have glycosuria. However, rarely, because of retained urine, such patients may have significant glycosuria.
3. *Other Conditions*—Other conditions to be considered because of hyperglycemia, glycosuria and acidosis are: lead poisoning, uremia, ketoacidosis of glycogen storage disease, renal glycosuria with ketosis, occasionally⁶ brain tumor, Cushing's syndrome, thyrotoxicosis, acromegaly, pheochromocytoma and pancreatitis.
4. *Hyperosmolality Complicating Diabetes Mellitus*⁷—This is a very rare complication in children, and, although these patients present with variable acidosis, hyperglycemia and hyperosmolality, in general they are not ketotic and are extremely sensitive to insulin. This condition, if present, deserves special consideration and will not be discussed here.
5. *Surgical conditions of the abdomen*—The abdomen symptoms of diabetic ketoacidosis (pain, tenderness, and, at times, hematemesis) may, occasionally, suggest a surgical abdominal condition. This diagnosis should not be

completely dismissed even after the diagnosis of diabetic ketoacidosis has been made, since one would expect such conditions as intestinal obstruction, perforation or appendicitis to cause rapid decompensation in the diabetic patient.

E. General Considerations

Once the diagnosis has been made and the condition of the patient is evaluated (by history and physical examination), the following should be carried out:

1. Start a flow sheet recording all fluid and electrolyte intake and output. Every 4 hours the figures should be checked and balances calculated.
2. Place critical patients on the "danger list".
3. Obtain vital signs frequently.
4. Consider a special nurse if necessary.
5. A sample of blood is obtained for: blood sugar, quantitative determination of serum acetone (see appendix), pH, Na, Cl, K, H CO₃ and NPN or BUN.
6. IV fluids are started, since these patients have poor gastric motility and since oral fluids increase the possibility of vomiting and aspiration. *All patients whose diabetic ketoacidosis is severe enough to warrant hospitalization should be treated with IV rather than oral fluids.* This rule may not apply to those patients with very mild ketoacidosis who are hospitalized primarily for education. If renal disease is suspected, extreme caution should be observed not to exceed the kidney's limited ability to excrete any excesses of water and electrolytes.
7. An EKG is obtained as an aid in evaluating cellular potassium levels.
8. *Urine* must be obtained to check volume, glucose and acetone.
9. *The stomach should be emptied by lavage* in all patients with moderate to severe ketoacidosis. Such patients should be given *nothing by mouth* in the initial period of treatment.
10. A careful search for possible *sources of infection* must be carried out early in the patient's evaluation. This should include: a careful history and physical exam, a CBC, urinalysis and appropriate cultures. However, it should be realized that ketoacidosis *per se* will elevate the white count and bring about a shift to the left. These determinations should be obtained as frequently as considered necessary

to have a better understanding of the patient's condition during the first 24 hours of management.

F. Insulin

Insulin therapy should be based on the severity of the ketoacidosis and only regular insulin should be used during this stage. Most patients over 4 years of age with mild to moderate ketoacidosis will need *1 to 2 units of insulin per kg.* Children less than four years of age are often very sensitive to insulin and therefore usually need an average of *0.5 to 1 unit of insulin per kg.* An insulin dosage of 3 or even 4 units per kilogram may be necessary for patients whose ketoacidosis is very severe. However, when this amount of insulin is contemplated, experienced physicians should be consulted! Insulin should be given one half intravenously, and one-half subcutaneously.

Semi quantitative serum acetone determinations should be checked at *two hourly intervals*, and insulin given accordingly. The original dose of insulin is repeated (half intravenously and half subcutaneously) until there is a decrease in the serum acetone, at which time *half the original dose is given* (half intravenously and half subcutaneously). *Four hours later, and four hourly intervals* throughout the next 24 hours and at 6 hourly intervals throughout the next day, regular insulin is administered subcutaneously on a *sliding scale* based on urinary sugar and acetone levels as follows:

For children *over 4 years of age:*

4 units of insulin per plus for 3+ (1%) and 4+ (2% or more) urinary sugar spillage if no acetone is present.

5 units of insulin per plus for 3+ and 4+ urinary sugar if acetone is present.

If Clinitest Reagent Tablets are used to evaluate urinary sugar concentrations, it is important to watch the reaction. If during the bubbling the color passes through orange and then settles back to brown or green, *it is a 4 plus reaction!*

Example:

	Urinary	Sugar
	3+	4+
Without Acetone	12U	16U
With Acetone	15U	20U

For children *under 4 years of age* 1/4-1/2 of the above sliding scale is used, because of the previously mentioned sensitivity to insulin.

G. Water and Salt

If the patient is in shock primary consideration

should be given to *plasma expanders or blood* (the later is given in quantities of 10 ml/kg).

Fluid replacement should take the following into consideration:

- 1. *Fluid deficit*—the following table serves as a guide:
History of dehydration deficit = 5% of body weight
Signs of dehydration deficit = 10% of body weight
Shock deficit = 15% of body weight
- 2. *Maintenance Fluid* = 110-120 ml per 100 cal per day (see appendix)
- 3. *Current fluid losses* are replaced every six hours using sodium and potassium solutions, concentrations depending upon the source of loss. The following table serves as a guide to replacement of current fluid losses. (for each 1000 ml of specific loss, the Na & K deficits are noted)—

	H ₂ O	Na (meq)	K (meq)
Gastric	1000	75	15
Small Bowel	1000	135	15
Diarrhea	1000	50	40

- 4. The fluid deficit and the 24 hours maintenance needs are then added, and *one half of the total* is given as half normal saline within the first 8 hours of therapy. *Once there is a decrease in the serum acetone, 5% glucose should be added to the therapeutic regimen.* The remaining 50% of the total fluid needs should be given as half normal saline plus 5% glucose during the next 16 hours. Because of the changing physiological state and ongoing losses of water, salt and potassium, the patient should be reevaluated with care throughout this therapy.
- 5. *Hyperosmolar solutions must be avoided in the early treatment of these patients!*

H. Potassium

Although the average patient with diabetic ketoacidosis has a normal or high level of serum potassium when first seen (usually associated with a contracted blood volume), there is almost always a profound total body potassium deficiency. Potassium leaves the cell during the hyperglycemic stage and is lost from the body in associated with the osmotic diuresis. Subsequently, after insulin therapy is begun potassium re-enters the cell, often resulting in a profound hypokalemia. The deficit is approximately 6 mEq/kg for the average 10%

dehydrated patient and may lead to: muscular weakness, intestinal ileus, inability to concentrate urine maximally and if severe enough, cardiac and respiratory failure.

As hypokalemia becomes severe, the EKG will show a progressive flattening of the "T" waves and the presence of "U" waves. Therefore, EEG monitoring is essential throughout the early portion of therapy once blood sugar has begun to fall. *Potassium replacement should not begin until there is a good urinary flow.* Once this is established, potassium should be added to the IV fluids in a concentration of 40 mEq/L. (See appendix for solutions containing potassium).

I. Sodium Bicarbonate

Severe acidemia, if present, should be corrected within the first 8 hours of therapy. Parenteral sodium bicarbonate is recommended if the blood pH is below 7.2 or if the CO₂ content is below 10 mEq/L. The bicarbonate deficit is calculated using the following formula:

(15-AB) x Bicarbonate Space

15 = desired serum bicarbonate level (in meq/L)

AB = actual serum bicarbonate level (in mgq/L)

Bicarbonate Space = 0.6 body weight

Sodium bicarbonate is given in concentrations of 30-60 meq/L (see appendix for available solution).

In the average patient, ketoacidosis is no longer present after 24 hours of treatment. Once the post-acidotic stage has been reached, therapeutic emphasis must be shifted from emergency treatment to preparation for living fully with a chronic illness.⁸

Outline Summary of the Management of Juvenile Diabetic Ketoacidosis

A. *Keep a careful record of:*

- 1. Total intake and output (fluid and electrolytes)
- 2. All laboratory determinations
- 3. All serum acetone determinations
- 4. EKG strips

B. *Insulin*

- 1. Initial dose: 1-2 U/kg (1/2 IV and 1/2 subcutaneously)
- 2. At 2 hours after the initial dose and a 2 hourly intervals:
 - a) Repeat the initial dose if the serum acetone remains unchanged.
 - b) Give 1/2 the initial dose if the level of serum acetone has decreased.
- 3. Four hours after original insulin dose has been decreased, and at 4 hourly intervals, use the following sliding scale: (treat only if there is a 3 or 4 plus urinary sugar)—

- Without acetone — 3 to 4 units/plus
With acetone — 4 to 5 units/plus
- C. *Water and Electrolytes*
1. *First 8 hours*
 - a) *Water and Salt*
Give $\frac{1}{2}$ of the total fluid requirements (deficit plus maintenance) as half normal saline. Change to half normal saline and 5% glucose when the level of serum acetone has decreased.
 - b) *Potassium*
Give $\frac{1}{3}$ of total potassium deficit (ave. total deficit = 6 meq/kg).
 - c) *Sodium bicarbonate*
Correct deficit if CO₂ content is less than 10 meq/L. Attempt to achieve a serum level of 15 meq/L.
 2. *Next 16 hours*
 - a) *Water and Salt*
Give $\frac{1}{2}$ of the total fluid requirement as half normal saline plus 5% glucose.
 - b) *Potassium*
Give $\frac{2}{3}$ of deficit.

Appendix

Titration of Acetone in Serum or Plasma

1. Place 2cc of the patient's serum or plasma into a test tube—label "1".
2. Set up a series of small tests tubes each containing 1cc saline—label 1:2, 1:4, 1:8, 1:16, etc.
3. Place 1cc of serum from test tube "1" into tube "1:2". Mix. Then transfer 1cc of the mixture from tube "1:2" into tube "1:4". Mix. Continue in this manner for all dilutions.
4. Test the sample in each test tube by placing one drop of solution on a crushed Acetest Tablet. Read the result at the end of 2 minutes. Record the greatest dilution which gives a positive (Lavender) reaction.

2. *Fluid Maintenance*

Standard Basal Calories

Wt. Kg	Calories/	
	Male	Female
3		140
5		270
7		400
9		500
11		600
13		650
15		710
17		780
19		830
21		880
25	1020	960
29	1120	1040
33	1210	1120
37	1300	1190
41	1350	1260
45	1410	1320
49	1470	1380
53	1530	1440
57	1590	1500
61	1640	1560

Increments or decrements—Add or subtract 12% of above for each degree C above or below rectal temp. of 37.8 °C Add 0-30% increments for activity

3. *Available Potassium and Bicarbonate Solutions (not to be given without dilution)*
 - a) Potassium phosphate—20 ml ampules containing 50 mEq of K and 32 mM of phosphate per 10 ml.
 - b) Potassium chloride—Ampules of 10 ml containing 20 mEq each of K and Cl.
 - c) Sodium bicarbonate—ampules of 50 ml containing 45 mEq.
4. The effective serum osmolality⁷ may be estimated according to the following formula: S. osm. (m Osm/L) = 2 serum sodium (mEq/L) + Blood sugar (mg/100 ml).

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Hemorrhagic Pleural Effusion: An Unusual Finding In Tuberculous Pleurisy

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Introduction

As one reviews the literature concerning tuberculous pleurisy it is apparent that little is reported concerning hemorrhagic pleural effusions. It was originally felt that hemorrhagic effusions were tuberculous until proven otherwise.¹ However, it became evident that a hemorrhagic effusion is an unusual finding in tuberculosis.²⁻⁴

The following is a case report of a patient with primary tuberculous pleurisy with a hemorrhagic effusion. In addition, all documented hemorrhagic pleural effusions seen at the Yale-New Haven Hospital between 1963 and 1967 are reviewed, along with 15 cases of proven tuberculosis with effusion.

Case Report

H.L., a 28 year old woman, was admitted to the Yale-New Haven Hospital with chest pain of one weeks duration. She had noted malaise with a 10 pound weight loss over the previous month. She denied night sweats or cough, and she was unaware of any contact with a person known to have had tuberculosis. She denied any calve tenderness, shortness of breath or hemoptysis.

Physical examination on admission revealed an asthenic appearing woman in no distress. Blood pressure was 110/70 mm Hg and the pulse rate was 90 per minute and regular. The temperature was 103°F. There was no apparent cardiac enlargement, and no cardiac rubs or murmurs were noted. The liver and spleen were not felt. There was no calve tenderness or swelling. The pelvic examination was normal.

Initial laboratory work included a hematocrit of 38%. The white blood cell count was 6,700 per mm³, with a differential count of 75% polymorphonuclear leukocytes, 13% lymphocytes, 10% monocytes and 2% eosinophils. The urinalysis was normal, the blood urea nitrogen was 8mg/100 ml and the fasting blood sugar was 103mg/100 ml. Total protein was 7.1g/100 ml with 3.9g/100 ml of globulin. Three LE preps were negative, as was a latex fixation.

A chest X-ray revealed a pleural effusion on the right side. No infiltrates were noted in the remainder of the chest.

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The research was done while Dr. Renert was an assistant resident in medicine at the Yale-New Haven Hospital and Dr. Sulavik was an assistant professor, also in the department of internal medicine at Yale.

A thoracentesis was performed which revealed sero-sanguineous fluid. There were 70,000 red blood cells per mm³. There were 6,000 leukocytes per mm³ with 72% lymphocytes, 18% segmented forms, 9% monocytes and 1% tissue cells. There was 6.2g/100 ml of protein and the glucose was 69 mg %. Culture and smear for both acid fast bacilli (AFB) and bacteria were negative.

A first strength PPD was positive. The patient had temperatures each evening ranging between 102 and 104°F. Blood cultures were negative, as were all viral cultures from stool, urine, blood and pleural fluids. Sputum cultures and gastric aspirants were negative for AFB.

A repeat thoracentesis was performed, but an attempted pleural biopsy was unsuccessful. The pleural fluid was again sero-sanguineous. There were 22,000 red blood cells per mm³ and 4,750 leukocytes per mm³. Differential cell count was essentially the same as the first sample. Culture and smear for AFB and bacteria were again negative.

A liver biopsy was performed (Fig. 1) which revealed many granulomata containing giant cells. Some of the granulomata were undergoing caseation necrosis with AFB seen on smear. The patient was begun on INH and PAS. Her fever gradually returned to normal, and she has done well, without recurrence of her pleural effusion.

Discussion

This case presented a relatively common diagnostic problem, a pleural effusion of undetermined etiology. The work-up included studies for infection, malignancy, collagen vascular disease and pulmonary embolus. The diagnosis was finally made on liver biopsy.

Norris and Landis stated that tuberculosis is the most common cause of hemorrhagic pleural effusions.¹ However, Berliner⁵ reviewed 100 cases of hemorrhagic pleural effusions and found 68% due to malignancy. He attributed 8 of the cases to tuberculosis. Four of these cases were in young adults who had no other X-ray evidence of tuberculosis. They presented essentially as the case described here and were classified as primary tuberculous pleurisy with effusion. Only 2 of these subsequently revealed AFB, one from the pleural fluid and one from the sputum a year later. The other two were accepted as tuberculosis on the basis of positive skin tests. The remaining four cases diagnosed as tuberculous pleurisy consisted of one chronic active case of tuberculosis, two advanced

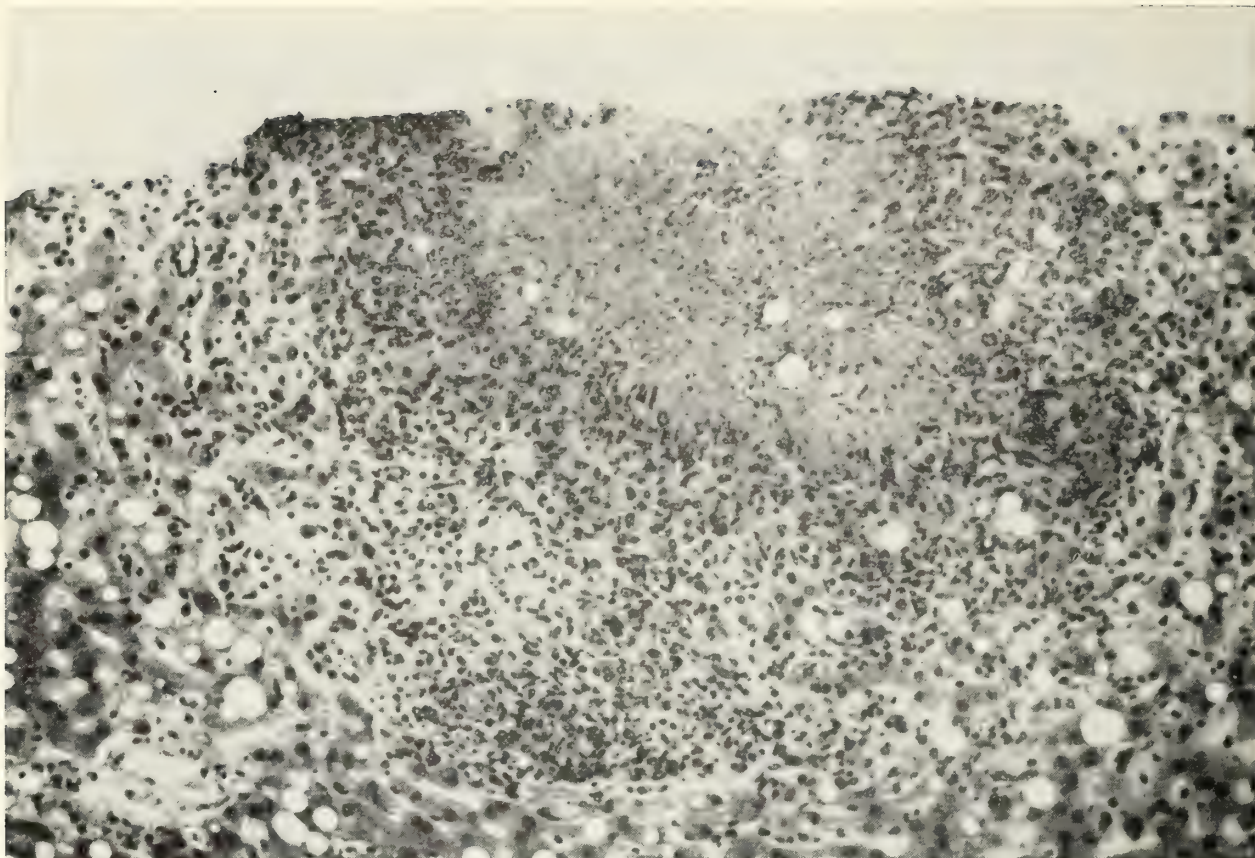


Figure 1A

A Section of the Liver Showing a Representative Granuloma Undergoing Necrosis. (Hematoxylin and Eosin, X 100).

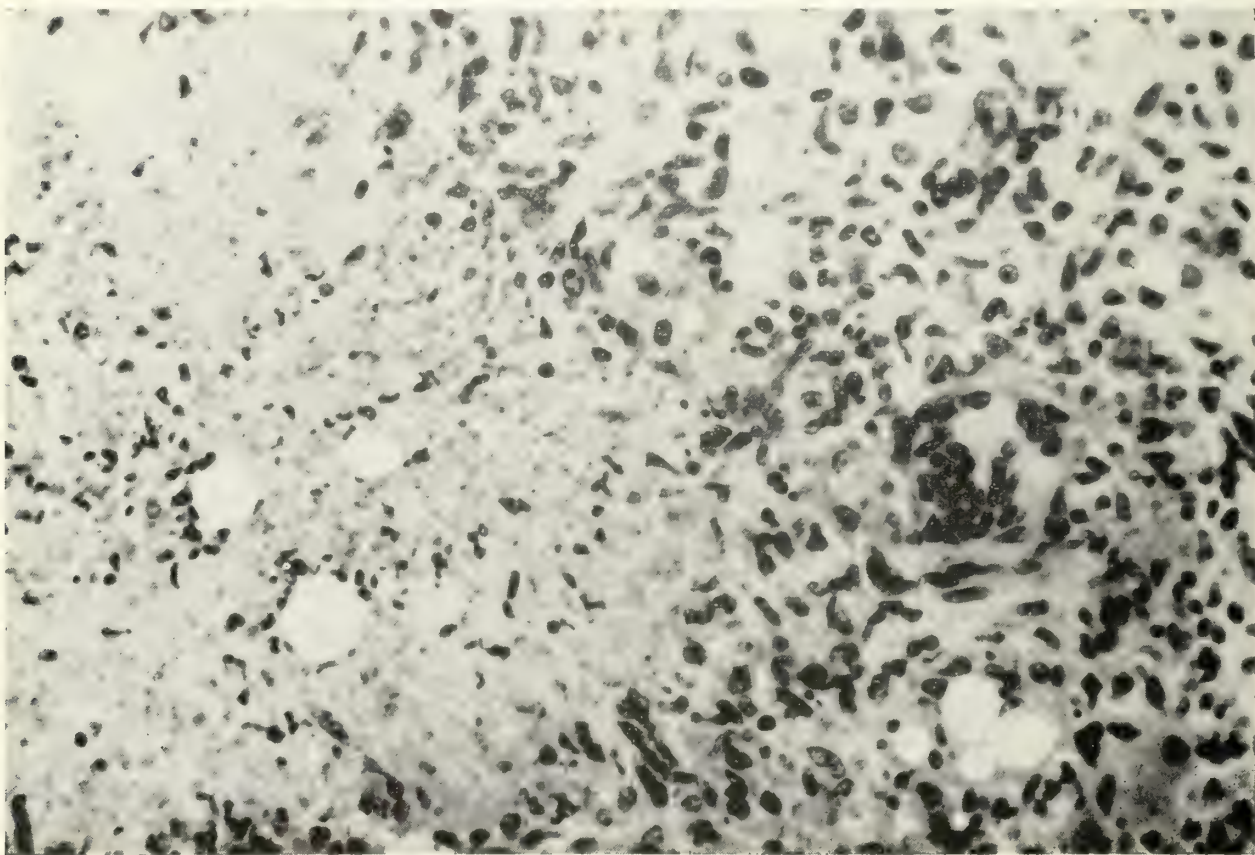


Figure 1B

A Close-up of the Granuloma in Figure 1A. (Hematoxylin and Eosin, X 250).

cases of tuberculosis and bilateral effusions, and one case of tuberculosis with Laennec's cirrhosis and ascites.

Goldman⁶ found two-thirds of bloody effusions to be a result of malignancy, a figure in agreement with Berliner's report. He stated further that tuberculosis was also a cause of a hemorrhagic effusion but gave no statistics. Karron and Purves⁷ reviewed 126 pleural effusions due to tuberculosis. They found eight bloody effusions. However, they divided their population into two groups, one definitely tuberculosis (isolation of tubercle bacilli) and the other group presumptive tuberculosis on the basis of a positive skin test. They did not state the percentage of bloody effusions contained in either group.

Stead et al² reviewed the operative and pathologic findings in 24 patients with the syndrome of idiopathic pleurisy with effusion, thought to be tuberculosis. Fifteen of the 24 patients proved to be tuberculosis, while the remainder had no evidence

of AFB. Of the 24 effusions, only 2 were hemorrhagic. One case was secondary to traumatic hemothorax, and the other case was the result of a ruptured bleb with pneumothorax. Neither case revealed tuberculosis.

All records of patients admitted to the Yale-New Haven Hospital between 1963-1967, and found to have a pleural effusion were reviewed. TABLE 1 contains those patients found to have a hemorrhagic pleural effusion, which was documented by a red blood cell count. In order to be considered hemorrhagic, an effusion must contain at least 5,000 red blood cells per mm³. This was the minimum number of cells described by Dieulafoy⁸ in a hemorrhagic effusion, and confirmed when it was repeated in this study. To be included in this study, each case had to have a definitive diagnosis. Of the 28 cases with hemorrhagic effusions, 14 or 50% had effusions secondary to a well-documented malignancy, either primary or metastatic. Another 5 or 18% had hemorrhagic effusions secondary to con-

TABLE 1

HEMORRHAGIC EFFUSIONS WITH DIAGNOSIS AND RESULTS OF THORACENTESIS

<i>Patient</i>	<i>Diagnosis</i>	<i>RBC's per mm³</i>	<i>WBC's per mm³</i>	<i>Protein g/100 ml</i>	<i>Cultures for AFB</i>	<i>Cultures for Bacteria</i>
M.W.	Ovarian Carcinoma	25,150	9,200	4.7	N	N
A.H.	Hypernephroma	52,200	5,800	4.3	N	N
M.H.	Metastatic Carcinoma	830,000	2,300	7.2	NP	N
P.A.	Carcinoma of the Lung	14,000	—	5.4	NP	NP
A.S.	Metastatic Carcinoma	6,350	600	7.7	N	N
A.E.	Carcinoma of the Breast	30,000	4,500	4.3	N	N
E.W.	Metastatic Carcinoma	168,700	10,500	5.4	N	N
A.S.	Ovarian Carcinoma	70,000	—	3.8	NP	N
R.D.	Malignant Lymphoma	40,500	14,000	3.4	NP	NP
B.M.	Hemangiosarcoma	900,000	4,300	4.4	N	N
S.P.	Hodgkin's Disease	102,000	—	—	N	N
A.M.	Hodgkin's Disease	12,500	—	3.5	N	N
C.M.	Ovarian Carcinoma	18,000	4,700	2.9	N	N
M.D.	Metastatic Carcinoma	94,000	—	5.8	N	N
M.S.	Congestive Heart Failure	12,000	3,200	—	N	N
A.A.	Congestive Heart Failure	16,000	30	1.0	N	N
A.O.	Congestive Heart Failure	22,000	2,100	6.8	N	N
V.A.	Congestive Heart Failure	6,600	665	2.1	N	N
C.C.	Congestive Heart Failure	23,000	245	2.8	N	N
M.M.	Pulmonary Embolus	9,000	—	—	N	N
W.L.	Pulmonary Embolus	8,540	1,890	2.2	N	NP
F.A.	Pulmonary Embolus	25,500	6,600	—	N	N
L.V.	Pneumonia	13,340	100	5.2	N	N
J.B.	Pneumonia	6,100	5,500	5.2	N	N
R.B.	Pneumonia	15,450	20	3.9	N	N
C.F.	Pneumonia	5,700	1,480	3.2	N	N
F.D.	Pneumothorax	120,000	—	4.5	NP	NP
D.D.	Collagen Vascular Disease	19,500	15,500	5.5	N	N

N = Negative
NP = Not Performed

gestive heart failure. All 5 patients had obvious physical findings of congestive heart failure, and chest X-ray showed cardiomegaly with pulmonary congestion. An additional three effusions were secondary to pulmonary emboli. Each patient had an established source for the embolus and had a positive lung scan or angiogram. Four patients with bacterial pneumonias developed hemorrhagic effusions. Each patient had fever, X-ray evidence of pneumonia, culture of a pathogen from the sputum, and a good response to an appropriate antibiotic. One patient had a hemorrhagic effusion from a traumatic pneumothorax secondary to fractured ribs. The final patient presented with hematuria and a right pleural effusion. She subsequently proved to have a collagen vascular disease.

TABLE 2 shows the effusions in the 15 cases of proven tuberculosis. No effusions was described as bloody and all RBC counts were less than 5,000 red blood cells per mm³. It is apparent that a hemorrhagic pleural effusion is uncommon in tuberculosis.

Many cases similar to the case presented here are diagnosed as tuberculosis solely on the basis of an effusion with a positive skin test, without evaluating the patient for other more common causes of a hemorrhagic effusion. When an effusion is found to be hemorrhagic, it should not be attributed to tuberculosis until tubercle bacilli are isolated. In

addition, a complete investigation should be undertaken to find another etiology of the effusion.

Summary

A case of primary tuberculous pleurisy with a hemorrhagic pleural effusion is presented. Case records from the Yale-New Haven Hospital over a five year period showed no tuberculosis in 28 cases of documented hemorrhagic pleural effusions. In addition, 15 cases of documented tuberculosis with effusion were reviewed, and no hemorrhagic effusions were present. Emphasis is placed upon other diagnostic possibilities to be considered in a case of hemorrhagic pleurisy of unknown etiology.

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TABLE 2

TUBERCULOUS EFFUSIONS WITH RESULTS OF THORACENTESIS

Patient	RBC's per mm ³	WBC's per mm ³	Protein g/100 ml	Culture for AFB	Culture for Bacteria	Source of AFB
E.W.	2,480	2,100	6.1	N	N	Sputum
S.F.	2,020	2,130	3.7	P	N	Pleural Fluid
R.C.	700	1,500	—	P	N	Pleural Fluid
L.W.	4,000	2,400	5.5	N	N	Open Lung Biopsy
F.B.	3,000	22,000	4.7	P	N	Sputum, Pleural Fluid
H.S.	500	1,000	5.5	P	N	Pleural Fluid
F.H.	1,700	1,400	5.5	P	N	Pleural Fluid
H.C.	2,000	12,000	3.1	N	N	Sputum
G.E.	1,000	3,800	6.3	N	N	Sputum
T.P.	3,250	1,250	5.6	P	N	Sputum, Pleural Fluid
W.M.	600	300	4.9	P	N	Sputum, Pleural Fluid
G.T.	3,900	7,950	4.2	P	N	Pleural Fluid
B.W.	3,500	150	1.7	N	N	Gastric Washings
E.L.	3,550	7,800	2.7	P	N	Pleural Fluid
R.M.	100	1,200	4.1	N	N	Sputum

N = Negative
P = Positive

Connecticut Medicine

Editorials

Obstacles To The Recognition Of Drug Reactions

Poor documentation of drug reactions has obscured the apparent frequency of toxicity. Millions of dollars spent by the AMA and the FDA on drug reaction programs have been relatively ineffective because of poor documentation. The fact is that recognition of drug reactions is difficult because they cannot always be viewed as clear cause and effect events. For instance, as in the case of alkylating agents in neoplastic diseases, long term effects may not be seen until the following generations or until subtle genetic abnormalities appear late in life or after administration of some other drug. Drugs that concentrate in certain tissues for example the phenothiazines in the retina or antimalarials in the ears can cause damage long after the drug has been discontinued. The maximal concentration of the drug in these tissues may not be reached until after the administration has ceased and the concentration may remain high for prolonged periods.

Difficulty in proving a cause and effect relation to drug toxicity is also a factor. For example, there often occurs variable compliance with medication orders. Data on orders in drug administration in hospitals are surprising. The error rate on drug administration is quite high and it increases as the number of drugs rises. If established error rates are apparent even with professional supervision provided in hospitals, the unreliability of drug administration in less supervised circumstances is even greater. One must know whether the patient suspected of having a drug reaction has or has not taken the drug in question.

A third obstacle to recognition of drug toxicity is the existence of a low index of suspicion. A physician is naturally reluctant to think that his treatment might contribute to the patient's disability. It is easier to attribute new symptoms to an extension of an underlying disease than to obvious or occult drug toxicity. In one study many house officers were not aware of their patients' drug reactions. Laboratory data and new

symptoms that do not "fit" into the anticipated course of the disease are ignored.

Melmon gives an example of hemolysis that developed in a patient with a deficiency of glucose-6 phosphate dehydrogenase, who was given primaquine in whom other acrilines or oxidants used as diuretic or uricosuric agents caused hemolysis. Life threatening clinical situations can lead to irrational use of drugs and the drama, urgency and helplessness of the situation mask the effect of drug reactions. When ventricular premature beats develop in a patient on lidocaine, it is not often recognized that the pharmacologic properties of the drug may lead to intensification of the arrhythmia if toxic doses are given. In most cases when intractable ventricular tachycardia develops it is attributed to disappointing and hopeless deterioration of the patient's clinical condition rather than to possible lidocaine toxicity. Not until central nervous system manifestations occur is the toxicity recognized and a "drug reaction" reported or at least considered by the physician.

A final obstacle to the recognition of reactions is the excessive use of combinations of drugs. It is rare to find a clinical study in which one agent is tested. Apparently polypharmacy has become a way of life for the American public. Physicians frequently prescribe multiple therapeutic agents simultaneously, but even when a simple drug is prescribed the ingestion pattern of the patient may vary. Over the counter preparations contain agents capable of influencing the metabolism, absorption and elimination of certain drugs. In a clinical situation involving polypharmacy, a "suspected reaction" may be easy to recognize but difficult to relate to a single drug.

To lessen the frequency of drug reactions obviously we need more information on the frequency and causes of drug reactions. The public must be educated not to demand pills, the physician should prescribe pills only when indicated. The aid of paramedical personnel must be enlisted. Above all else we physicians need to understand thoroughly the drugs we prescribe. If careful observations had not been made by

physicians administering drugs the cataracts associated with MER-29, the teratogenicity of thalidomide, the ototoxicity of streptomycin, the hepatotoxicity of outdated tetracycline and even the gastrointestinal bleeding produced in the rare case of aspirin would not have become common knowledge.

We need more information about the reasons people take drugs and some of the economic waste and personal misfortune associated with problems such as drug addiction. Meperidine addiction removes 300 physicians from practice each year. There is increasing awareness of the problems created by polypharmacy, the effect of drugs in complicating therapy or invalidating laboratory tests, the effect of drugs on genes, the way to separate adverse drug reactions from non-reactors, and the factors that predispose patients to drug reactions.

Drug information and referral centers can help in patient and physician education and voluntary programs can improve prescription practices. We must learn how to recognize reactions and to understand why patients do or do not comply with their doctor's prescriptions. We can decrease errors in drug administration and at least be able to trust that the patient actually takes what is prescribed for him.—L.H.N.

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Mutual Medical Dental Problems: Periodontal Disease

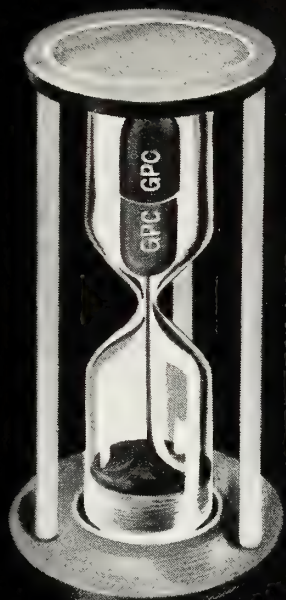
The two most common oral diseases are dental caries and periodontal disease. This is divisible into diseases confined to the gingiva and those affecting the underlying supporting periodontal tissue called periodontitis (pyorrhea). Inflammation is the predominant if not the sole pathologic process.

Periodontal disease affects 67 million adults and has caused the loss of all natural teeth in 20 million Americans. The disease begins quite early in life. By age 15, 4 out of 5 already have gingivitis which is the precursor of periodontitis. The paradox of the situation is that most periodontal disease is preventable being caused by local irritants in the oral cavity that are accessible, correctable and controllable. The principle local factors are bacteria, dental plaque calculus, materia alba, food impaction and mechanical chemical and thermal extremes. In short, poor oral hygiene which permits local irritants to accumulate on the teeth overshadows all other factors responsible for periodontal disease.

In essence periodontal disease is a neglect disease of the healthy mouth that permits disease to occur and neglect of early disease that permits it to advance and destroy the tooth supporting tissues. A patient with periodontal disease cannot be considered a healthy patient and no comprehensive medical check up is complete without examination of the gums. Infected periodontal tissues are a potential source of transient bacteremia with its risks to patients with rheumatic valvular disease. In a patient with periodontal disease, the mere act of chewing is enough to force bacteria into the blood stream. When infection is a possible cause of a patient's medical complaint periodontal disease is a far more likely source than the traditionally suspect "dental abscess" which are not necessarily infective.

Gingivitis which is the precursor of periodontitis is a local disease caused by local factors but may be aggravated by systemic conditions such as first 3 months of pregnancy, epileptics taking dilantin and develops more readily in Vitamin C deficiencies. It may be produced by the patient's "bite" or contacts between opposing teeth during mastication.

Periodontitis is usually painless and only when bleeding gums, bad taste, itchy feeling in gums relieved by digging between the teeth with a



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tooth pick, pressure between the teeth after eating and vague pains in the jaw especially on rainy days does the disease declare itself. Occasionally there is throbbing pain, swelling, fever and systemic complications develop from acute infection superimposed on the underlying chronic disease. As periodontitis advances the teeth loosen and spread apart creating unattractive spaces between them. The roots become exposed as the supporting tissues are destroyed. Mastication becomes impaired and patients acquire selective habits that favor eating of soft carbohydrate rather than fibrous foods. The most important feature of periodontitis is destruction of alveolar bone which deprives the teeth of their support, makes them inadequate for chewing and is responsible for their ultimate loss.

In essence the treatment consists of removal of local irritants responsible for inflammation. The dentist must correct also environmental factors such as rough fillings the retain plaque. He must correct improper tooth contacts that result in food impaction between the teeth. Finally he must strive to create proper occlusions. This might require reshaping of teeth, restoration of missing teeth, and joining together of

teeth that require additional support to function properly. It also requires education and motivation of the patient to provide the necessary standards of oral hygiene for without these the treatment of periodontal disease will not succeed. The patient must pursue a fastidious program of oral hygiene to prevent accumulation of disease producing local irritants.

The widespread prevalence of periodontal disease and the demands it places on individual and community resources to repair the damage that it produces make it a serious health problem. The magnitude of the problem, the mounting back-log of untreated disease, despite imaginative improvements in treatment, and the influence of new disease, as populations increase, all indicate the urgency of prevention. Within the bounds of existing knowledge it is agreed that proper oral hygiene prevents most of periodontal disease. Here the patient can effectively assist in preventing and reducing the severity of the disease by tooth brushing, supplemented by other cleansing methods such as dental floss, interdental cleaners and water irrigation under pressure.

Of course preventive measures which depend less on individual efforts and can be provided on a mass basis as water fluoridation would be highly desirable. In the interim, however, emphasis must shift from salvaging dentitions needlessly permitted to deteriorate because of periodontal disease towards using existing methods of preventing it.—L.H.N.

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Neurogenic Effects On The Electrocardiographic Wave Forms

Alterations of the electrocardiogram occur in a variety of states in which the primary pathology is extracardiac. For example, T changes can occur after ingesting ice water or hot liquids. This is explained by the temperature being altered in the inferior portion of the heart which rests on the diaphragm. Similar though more pronounced changes in the STT portion of the electrocardiogram have been described in inflammation of the pancreas and during biliary colic and diseases of the gallbladder. Of special interest however, neurologic diseases can pro-

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duce pronounced electrocardiographic changes that are not primarily cardiac in origin. The abnormalities which sometimes occur in neurologic disease are many, the most striking alterations from normal that have been observed. In addition, neurogenic changes in the electrocardiogram furnish valuable insights into the physiologic bases for this change.

Neurogenic electrocardiographic abnormalities should not be taken as evidence of primary heart disease. The most marked abnormalities are characteristic and are unlikely to be mistaken for effects of heart disease provided their association with neurologic disease is appreciated. The findings consist of large T waves of either normal or abnormal polarity, prominent U waves and prolongations of the QT or QU interval. The association of these ECG features with neurologic disease is well established and the large T waves in particular distinguish the findings from those of other states. It has also been established that less striking and less characteristic abnormalities of the STT deflection occur as a result of neurologic disease.¹

These at times cannot be differentiated from abnormalities due to other causes including heart disease on the basis of ECG changes alone. It is however important that the possible neurogenic origin of non-specific ECG abnormalities be considered in patients with neurologic disease to avoid the erroneous diagnosis of heart disease. In other words the electrocardiogram is not a doctor.

The physiologic mechanism by which diseases of the nervous system influence the ECG is most likely the direct effect of the autonomic system on electrophysiologic behavior of the heart. Other possibilities such as hypotension, hemodynamic or electrolyte disorders have not been noted in such instances. Furthermore the most marked ECG abnormalities associated with neurologic disease do not resemble those which occur with hypotension or electrolyte disease. Findings in experimental animals strongly favor altered sympathetic tone for the mechanism of change in the STT patterns associated with neurologic disease. Stimulation of many brain stem and some control areas have been demonstrated to alter the ECG.² In the dog stimulation or destruction of cardiac sympathetic nerves at the levels of the stellate ganglia results in systematic changes of the STT deflection.²

These experiments in dogs are especially in-

formative since the cardiac distribution of the right and left sympathetic systems differ and localized effects can be produced. Sympathetic stimulation shortens ventricular recovery time while ablation prolongs it. In the case of the right stellate ganglion the effects occur in the anterior ventricular wall while those of the left stellate affect the posterior wall. Stimulation of the right stellate produces a state with shorter recovery time in the anterior than in the posterior ventricular wall. Ablation of the left stellate produces a similar relationship due to prolongation of recovery time posteriorly and the ECG effects resemble those associated with stimulations of the right stellate ganglion. Likewise in left stellate ganglion stimulation or right stellate ablation results in similar temporal relationship of recovery time in anterior and posterior ventricular walls and similar ECG effects.

Electrocardiographic effects of experimental alteration of sympathetic tone in dogs resemble those observed in patients with lesions of the central nervous system. In particular the effects of experimental left stellate stimulation or right stellate ablation results in large T waves and prolongation of the QT interval similar to findings characteristic of neurologic diseases of man. Right stellate ganglion stimulations or left stellate ablation results in low or inverted T waves which, although less characteristic of neurogenic origin, are known to occur on this basis.

Unilateral alteration of sympathetic tone also provides an explanation for a particular feature of the ECG associated with neurologic disease. The ECG tracings with non-specific abnormalities of neurogenic origin have notched T waves more frequently than ECG's which are abnormal for other reasons.¹ This finding is compatible with asymmetric alterations of sympathetic tone resulting in two populations of ventricular recovery times. Other clinical findings closely related to the experimental findings have been reported by Hugenholz.³ Marked ECG abnormalities similar to those previously observed in association with neurologic lesions were noted in a patient after right radical neck dissection with probable destruction of sympathetic fibers.

Even though neurologic ECG abnormalities can be explained on the basis of functional alterations of ventricular recovery, there is also evidence that there may occur structural cardiac alterations in the form of subendocardial pete-

chiae edema in subarachnoid hemorrhage and in experimental animals made hypertensive by stellate stimulation. Morphologic changes in the myocardium have been produced by experimentally induced intracranial hemorrhage and by the intracranial injection of blood in mice. Repeated stimulation of the mid brain reticular formation in cats have resulted in small scattered myocardial lesions most marked in subendocardium. Similar scattered lesions were reported in 8 per cent of autopsies from a neurosurgical service. In another study actual myocardial infarcts were present in 13 of 160 patients with cerebrovascular accidents but whether these were independent occurrences are still undecided.

At present it is established that both characteristic and non-specific abnormal ECG occur as a result of neurologic lesions. The most likely mechanism of neurogenic ECG abnormalities is altered autonomic tone which may affect the ECG as a result of functional alterations of ventricular recovery time by the production of autonomic lesions or by a combination of these mechanisms. Whatever physiologic mechanisms operate, neurologic lesions should be added to the already long list of states in which STT deflections may be abnormal.^{5,6}

The possible neurogenic origin of such abnormalities should be considered in appropriate patients to avoid the erroneous diagnosis of primary heart disease.—L.H.N.

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Emotional Stress And Sudden Death

My life is at the mercy of any scoundrel who chooses to put me in a passion.—John Hunter

The fact that excessive exertion can precipitate myocardial infarction or sudden death in persons with coronary artery disease (CAD) is fairly well established.¹ The sudden deaths in the winter of persons while shovelling snow are frequently reported. The question now is raised whether strong emotion, fear, rage, grief or joy ever precipitated sudden death in an emotion. Can this be a verifiable psychophysiologic sequence? Certainly in folklore there are encountered many instances of sudden death ascribed to emotional shock. As far back as written records exist people are described as dying suddenly while in the throes of rage, fear, grief, humiliation or joy. Thus the bible tells us that when Ananias was charged by Peter "You have not lied to man but to God", he fell down dead. So did his wife Sophia when told that "the feet of them which have buried thy husband are at the door and shall carry thee out" (5 Acts 3:6).

Emperor Nerva is said to have died of a "violent excess of anger" against a Senator who offended him as did Valentinian while reproaching with great passion the deputies of a german tribe. Pope Innocent IV succumbed suddenly of the "morbid effects of grief on his system" soon after the disastrous overthrow of his army by Manfred and King Philip V is said to have dropped dead when he realized the Spaniards had been defeated. Cholon of Lacedameon is alleged to have died from joy while embracing his son who had borne away the prize at the Olympic games.² In more modern times novelists and playwrights have no compunction about arranging for their characters to succumb to a heart attack or stroke in the midst of some emotional crisis and the public does not find the use of such literary devices implausible.

If psychic stress is indeed a factor potentially contributing to a lethal outcome in a vulnerable population it behooves us to identify the population at risk to elucidate the psychic determinants and understand the psychophysiologic mechanisms. Our population already identified as at risk from sudden death are men with previous myocardial infarction, angina pectoris and known "risk factors" of coronary artery disease.^{3,4} It would be precisely such a group that the possible role of psychic stress as a contributing factor to increased risk of sudden death deserves consideration.

Before the mechanism mediating such psychophysical accidents can be studied it is first neces-

sary to identify and classify the kinds of life circumstances and psychologic reactions with which sudden death is alleged to be associated and to establish the prevalence of each association. The first step in this admittedly difficult process was just taken by Engel² who turned to the daily press for a population whose deaths were already considered to be related to disrupting life events. He collected 170 such items over a period of 6 years. The material is ample enough to permit identification of the kinds of life circumstances alleged to precipitate sudden death. The 8 categories in which he divides his cases showed the common characteristics of an intense emotional excitation and an inability to control or cope with a situation.²

When we come to consider the mechanisms by which sudden death can occur in man we may reason by analogy from experimental observations in animals. Trappers and Zoo keepers long have known that animals may die suddenly when escape becomes impossible or when the animal is transferred to an unfamiliar locale, is immobilized or exposed to unexpected or excessive situations. Hofer⁵ found that various species of wild rodents when subjected to sudden alarming situations become immobile with high respiratory rates, low heart rate many cardiac arrhythmias of a parasympathetic type also found by Richter⁶ in wild Norway rats.

Most would agree that effective cardiac arrest whether caused by asystole from excessive parasympathetic stimulation or ventricular fibrillation is probably responsible for the death of those who collapse and die within minutes as was the case of most of the deaths in Engel's series and probably the folklore deaths mentioned above. There is probably an organic substrate in most of these patients. It is known that over two thirds of sudden deaths occur in individuals with disease of the heart and aorta. Spain⁷ and his colleagues found that death could be attributable to coronary artery disease in 91 per cent of men and 52 per cent of women who die within an hour.

When looked at from the psychological perspective it seems likely that conditions conducive to rather profound neurogenic cardiovascular influences existed in these people at the time of death. Extreme parasympathetic stimulation could produce prolonged asystole. Extreme and prolonged sympathico-adrenal discharge could produce spontaneous ventricular fibrillation.



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Given the vicissitudes of life, strong emotions under psychological stress are the unfortunate lot of many persons day in and day out. Do these emotions lead to sudden deaths in patients who already have organic heart disease or in those who do not? Engel has brought this enormously important problem into focus. The answer is probably "Yes." Let's now begin to collect more data.—L.H.N.

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Addiction And Preaddiction

We know an enormous amount about the action of drugs, about the psychological make-up of addicts, about the sociology of addiction. However, we cannot yet put all our data together and make a sensible explanation of the whole. Last year in Denmark psychiatrists heard a paper by a Swedish psychiatrist which attempted to make a synthesis of many pieces of information and produce a unifying theory of addiction. Basically there is perhaps nothing new in his ideas but he puts them together better than do most others. It is the opinion of Nils Bejerot¹ of the Caroline Institute of Stockholm that addiction is really an artificially induced instinct and that there are two stages in drug dependence.

In the first stage the patient is abusing the drug, but he is still in control. In the second the process has developed its own dynamics and the treatment becomes totally different. Certainly the problem is one that concerns many disciplines, but too often the representatives of these disciplines fail to understand each other and

adopt almost hostile attitudes to their colleagues from other specialties. However, all tend to see addiction as a symptom of some chemical, psychological, social or ethical defect either in the individual or society. All this seems to Bejerot to be pale and sterile. Real addiction whether to a hard drug or to alcohol is not a symptom but a deep-seated pathologic state with dynamics all its own.

As an example he cites tobacco. The adolescent begins to smoke to show his manhood. Thirty years later he is fiercely addicted although the original need has long since gone. The process has taken over. This does not support the idea that a person has to have a personality problem or a social problem to become an addict. Any person or any animal can develop a dependency if enough of the substance is introduced into the body for enough time. The greater the addictive properties of the substance or the more pleasant the pharmacologic effects, the greater and the more effectively will it cause dependency. This latter state must be sharply differentiated from misuse of the drug.

With drug abuse the patient is still in control. The period of abuse before dependency begins and the drug takes over varies with the drug. With heroin it is a matter of weeks, with barbiturates it is a matter of months, with alcohol a matter of years. But in the young the process is accelerated and so we may see alcoholics in their early twenties. Addiction will set in more quickly if the substance is injected intravenously than if it is taken by mouth. Apes develop alcoholism quite fast with continuous intravenous injection of alcohol.

Bejerot sees an analogy with the sex drive. John Doe becomes infatuated with someone and invents all sorts of reasons for absenting himself from the house to be with his new love. Soon the affair gets out of control and he is obliged to continue his deceptions whatever the cost. He is hooked, but the tricks he resorts to in order to satisfy his sexual dependency are minor compared with the tricks the drug addict uses to get his beloved heroin. In fact we know that addicted man or animals prefer their drug to sex both quantitatively and qualitatively.

This gives us some idea of the hardship the drug addict experiences when he is asked to abandon his drug. Would an erring Don Juan consent to castration to cure his ill? The sex deviant usually prefers a life in a closed institu-

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tion to castration and freedom. As Rado said of drug addiction, "the patient does not suffer from his illness he enjoys it." One does not need to be psychiatrically disturbed to prefer pleasure to the sensible way of life. There are many enlightened fat people who remain fat. Note the common case of the alcoholic who will accept gastritis and heart and liver complications provided he is not deprived of his alcohol.

According to Bejerot, dependency is in fact a short-circuiting of the pain-pleasure principle in which an artificial drive or instinct is created comparable to the sexual instinct but stronger. The neurophysiologist Olds³ has shown us the results of implantation of an electrode into the "pleasure center" of the brain of rats. They forget all else but the self-stimulation of the electrode. Sievers² experiments with monkeys who were able to inject themselves with narcotics and did so ad nauseam are also pertinent to the idea of short-circuiting everything to save the pleasure principle. Even in the insect world there are instances of addictions, as in the case of ants which become crazy about a secretion from a certain type of beetle.

Thus, we are dealing with a deep-seated biological phenomenon of which other examples are seen in the girl with anorexia nervosa, the compulsive gambler, or the sex-pervert. The implications of this view of addiction are obvious. Once this stage has been reached, appeals to the cooperation of the addict must be strong indeed to break the charmed circle.—L.H.N.

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What Population Is Optimum?

Assuming we knew what an optimum population for any country should be, and we don't of course, no one has as yet explained how a government could go about doing this anyway. The biologists seem to be the pessimists while other experts seem more optimistic about the state of such countries as Britain. Ninety per cent of biologists at a recent conference¹ agreed that

Britain already passed its optimal population but nobody seemed sure what to do about it.

The three major stresses on an overpopulated land are pollution, nutritional stress and social stress. Man has a great penchant for fouling his own nest. Yet the prospects for controlling pollution are good even in a crowded land such as Britain if the population is prepared to pay for this. Examples are already at hand. London air is far purer than it was 20 years ago as is Pittsburgh's in this country, and the River Thames has been cleaned up remarkably. Science should be able to solve too the problems of smog. By the year 2000 the idea of individual gasoline driven motors will seem barbarous. To deal with thermal pollution to waterways which now kills fish when the wasted heat ought to be used for warming homes or desalinating water even now seems senseless as does sewage pollution. However, unless there is some clear thinking and drastic action, pollution rather than food supply may well prove the limiting factor in population.

At the London Symposium on this subject, Cooke, an agricultural expert, pointed out that it is very hard to assess the capacity of land for feeding a population.² This has been recently demonstrated in India where the introduction of new strains of cereal has transformed the productivity of wide areas. It appears that in Britain the depopulation of rural areas and lack of local labor are much more worrisome problems than actual production problems. Much depends on the type of diet the population uses. For example, an American type diet costs 11 times as much as a subsistence diet and needs several times as much land.

What of the social consequences of increasing population? Hawthorne pointed out in the Symposium that the economists have been both optimistic and pessimistic and that the supporting evidence for both is hopelessly unsatisfactory. There are arguments from animal populations at first sight seeming convincing, but they are not conclusive. Southwood wondered whether the mechanisms that regulate animal populations are already operating in man. The signals of stress and pollution which operate in other species may eventually appear in the form of prolonged immaturity, failure to obtain territory for breeding sites. This may be another name for the housing shortage in so many big cities and lowered fertility. Freeman also noted that in primitive races, fertility was more commonly

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limited by concentrations of mobility and space than food supplies.

Southwood suggested that the definition of optimum population is "the maximum that can be maintained indefinitely without detriment to the health of the individual from pollution or from social or nutritional stress." Granted, but where do we go from there? Optima are not absolutes. They are related to the objectives we set, and within each range of objectives set, there are conflicts between the biological, agricultural, economic, and social factors. We work with alternatives. We have to trade off advantages against disadvantages. In a democratic fashion it would certainly be hard to make out a case for an active government population policy, for the time spaces are all wrong.

Logically, we would have to ask the children about to be conceived what they wanted of life, for all changes will be small and very long term. The fact is population management is a highly inexact science and even if we knew what was optimal for a given date ahead, we have no means of knowing whether our targets would be readied. The biologists however believe we cannot sit with folded hands and wait for population management to become an exact science before doing something.

Parker posed the very interesting question whether it is not the doctor's duty to match his efforts at death control with equally strenuous ones in the cause of birth control. He regards the extreme procedures adapted to overcome infertility as "splendid stuff" in relation to biological research but as verging on therapeutic hysteria when viewed in the light of the community or even human happiness. Medawar spoke of the need to convince individuals that they must sacrifice some of their reproductive drive in the interests of preserving the essentials of decent living. We must be urged to "reverse the trend to thinking of fertility as noble and admirable and the infertile as abnormal."

Ehrlich was very pessimistic. For him the choice is clear—population control or global catastrophe through thermonuclear war, pollution, plague, some ecocatastrophe such as a change in the earth's climate or simply a downward spiral as living standards drop.

As a guide to individual and collective conduct the Symposium was in no wise an unqualified success. Rather than scientific fact, most of us have our private feelings about population

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*U.S. PATENT NO. 2,895,577

problems. They will remain in the realm of emotion and intuition for the present. There is just not enough objectivity and scientific fact to know what is an optimum population.—L.H.N.

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The Elderly American: A Deprived Minority?

When one looks at an older individual it becomes apparent that he experiences stress from partial isolation and deprivation as well as from external hostile or disruptive forces. The human body and brain do require external stimuli and supplies in order to remain efficient and deprivation can result in temporary or permanent disabilities. To be sure, humans differ and do not require the same amount of external stimuli and supplies. This accounts for the considerable variations in what becomes an optimum situation.

Many stressful circumstances develop in older persons that are clearly attributable to social and economic factors. We physicians have always appreciated the impact of isolation and deprivation on the health of our older patients. Social scientists have developed a number of theories relevant to the aging and the aged and the structure of society and social change. One of these theories holds that the status of the aged is high in static societies and tends to decline with the acceleration of social change.

Another theory is the proposition that the status of the aged is inversely related to the proportion of the population; that is, the aged are most highly valued in societies where they are scarce, and their value and status declines as they become more numerous. A third theory holds that the status and prestige of the aged are high in those societies in which older people in spite of physical infirmity are able to continue to perform useful and socially valued functions.

It is apparent that we are living in a rapidly changing world and society, viewed in fact by a very prominent sociologist as the chaotic society. If the first theory has any validity, then the status position of elderly in the U.S. will decline further. As to value being tied to scarcity in an

age group, it does not appear that by the year 2000 the proportion of elderly will change in numbers although their numbers will rise. The third theory has a very pessimistic quality since early retirement is a rapidly accelerating pattern that will make it increasingly difficult for the elderly person to be involved in socially valued functions.

By the year 2000 we may expect a population of 310 million, and 30 million will be over 65. In planning for future health services, we must recognize that 20 million will be over 75, and that this age group will use up the bulk of our health, hospital and nursing services. One half of those over 65 will be widowed, divorced, or never married. A sizable number will lack family ties, and the lack of these ties will make periods of illness or disability more difficult. More than ever before, the problems of aging will be dominated by the special needs of aged women since the sex ratio will have dropped to 73 older males to 100 females.

In recent years, two new theories have developed that have been systematically investigated and reported. One, the disengagement theory, maintains that marked withdrawal from activities is the modal pattern in aging. High satisfaction in aging usually results from the acceptance of the "inevitable reduction" in social interaction. Contrariwise, the activity theory maintains that satisfactions in old age are increased if the individual maintains his interest and activities within the limits of his capabilities.

This social theory of activity has a parallel in the biomedical phenomenon of atrophy of disease, and Busse's work supports the view that continuing activity throughout the life span is beneficial and achieves greater satisfaction. One cannot ignore the fact that there are differences in life long patterns of living and that there are some people who tend to maintain relatively high or relatively low levels of activity. The question of course that needs documentation is whether those who reduce their activities as they age tend to suffer a reduction in overall satisfaction or whether they do not.

Economic deprivation is a very common problem among the elderly, and its devastating results can be observed and appreciated. The economically deprived older person must reduce his opportunities for living experience. He cannot buy all the things he supposedly has saved for all his life, and he does not have the security

that comes with a stable financial situation. In addition, the elderly person belongs to a subgroup of subculture of society, and there is a disparity between the values and goals of middle-aged adult society and old age.

Society has failed to provide learning opportunities and recreational opportunities for the elderly to the same degree that they have provided them for the young and the middle aged. Deprivation can transpire within a social structure because of lack of methods of maintaining self-esteem. An individual must feel that he is valued or appreciated by others in order to have a reasonable esteem of his own self. There is no doubt that the elderly American can be identified as belonging to a deprived minority.—L.H.N.

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Aspirin In Venous Thrombosis

Treatment of venous thrombosis and pulmonary embolism with anticoagulants is based on the traditional view that this lesion results from blood coagulation and fibrin formation. Recent observations however have suggested that platelet thrombosis may have an important role in the venous circulation. If so, then drugs which have an effect on platelet adhesiveness might also be effective in preventing venous thrombosis. Aspirin, dipyridamole, dextran are such drugs, and Salzman¹ and his colleagues compared the

effects of these drugs with warfarin in patients known to have a high degree of venous thrombosis, patients undergoing vitallium mold arthroplasty of the hip.

The efficacy of prophylactic administration of oral anticoagulants in patients with a high risk of venous thromboembolism has been established by many control studies.² However, if an alternative preventive measure were equally effective without hemorrhagic side effects and the necessity for laboratory control, such an agent would have wide clinical applicability. The hypothesis that platelet thrombosis has a primary role in the genesis of venous thromboembolism led Salzman to consider the use of the above agents for prevention of thrombotic complications in surgical patients.

There were several experiences which led them to abandon low molecular weight dextran and dipyridamole. Dextran had its drawbacks in occasional bleeding and the need for continuous intravenous infusion. Dipyridamole was not found suitable because thromboembolic complications occurred in 26 percent of patients receiving it, a rate not significantly different from the control group. Aspirin however, in patients who tolerate it, was as effective as warfarin as an antithrombotic agent in high risk patients and offers an alternative form of effective antithrombotic therapy to warfarin. If confirmed, this is a clear advance. It is of course possible that aspirin effects are not limited to its platelet function but may also have an effect on other factors such as blood flow and inflammation which contributes to the clinical response in these cases.

Thus, the question posed whether venous thrombi are triggered through the early formation of a platelet nidus is not settled. Certainly there is considerable pathologic evidence that some if not all are, and Salzman's report is the first to provide some evidence that platelet phenomena may be of considerable importance in the pathogenesis of venous thrombosis and that antiplatelet agents may provide an alternative to anticoagulants for the prevention of thromboembolic disease. If the clinical observation can be confirmed and the mechanism of the action of the effective agent shown to be attributable to its antiplatelet effect, the therapeutic implications immediately extend to the prevention of arterial thrombotic disease, a much larger and more pressing public health problem.

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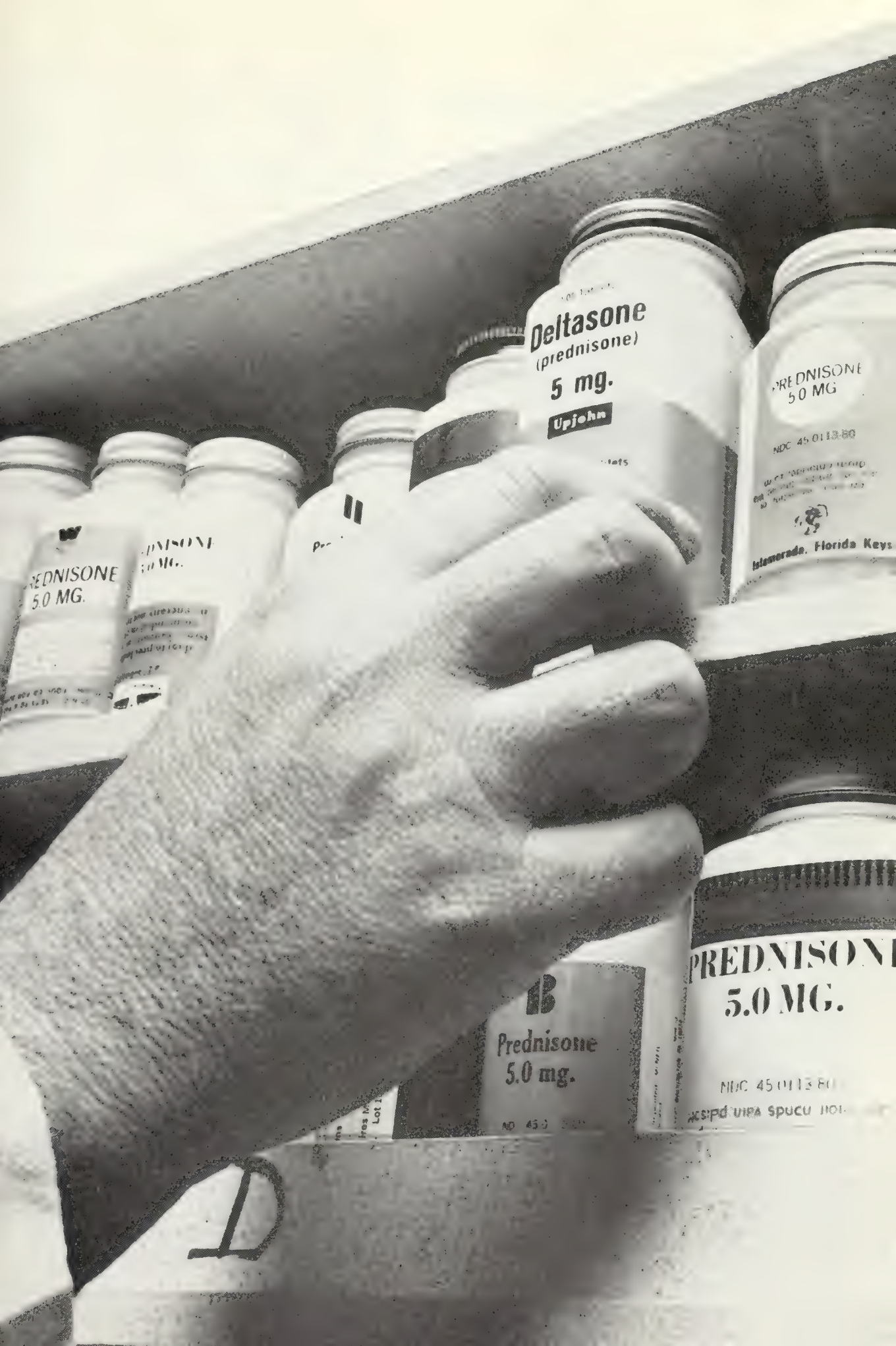
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Contraindications: As for all other corticoids. **Considered Absolute**—herpes simplex keratitis, acute psychoses and latent, healed or active tuberculosis. May be lifesaving in certain cases of pulmonary or meningeal tuberculosis, but should be used only in conjunction with adequate and effective antituberculous therapy to which causative organisms are shown to be sensitive. **Considered Relative**—active or latent peptic ulcer, Cushing's syndrome, diverticulitis, fresh intestinal anastomoses, osteoporosis, renal insufficiency, thromboembolic tendencies, psychotic tendencies, diabetes mellitus, hypertension, local or systemic infections including vaccination, varicella and other exanthematous diseases, and fungal infections, and, pregnancy particularly during the first trimester because of observation of fetal anomalies in experimental animals. If necessary to give corticosteroids during pregnancy, watch newborn infants closely for signs of hypoadrenalism and institute appropriate therapy if signs appear.

If corticoids are used in the above conditions, weigh risks against benefits.

Precautions: Deltasone should be given only with full knowledge of characteristic activity of and varied responses to corticoids. Because of inhibiting effect on fibroplasia, corticoids may mask signs of and enhance spread of infection; hence, watch patients closely, and if intercurrent infection occurs, control with appropriate antibacterial measures. If possible, avoid abrupt cessation of corticosteroid therapy because of the danger of superimposing adrenocortical insufficiency on the infectious process. Prolonged hormone therapy usually causes a reduction in the activity and size of the adrenal cortex. When discontinuing therapy, relative adrenocortical insufficiency may be avoided by gradual reduction of dose. However, a potentially critical degree of insufficiency may persist asymptotically for some time even after gradual discontinuation of adrenocortical steroids. Therefore, if a patient is subjected to significant stress, such as surgery, trauma, or severe illness while being treated, or within one year (occasionally up to two years) after treatment has been terminated, hormone therapy should be augmented or reinstituted and continued for the duration of the stress and immediately following it. Since mineralocorticoid secretion may be impaired, salt and/or desoxycorticosterone should be administered conjunctively. It is preferable to use a soluble hormone preparation in the immediate preoperative and postoperative periods.

Although unlikely with Deltasone, average and large doses of corticosteroids can cause elevation of blood pressure, salt and water retention and increased potassium and calcium excretion. Dietary salt restriction and potassium supplementation may be necessary. Glucocorticoid steroids may aggravate diabetes mellitus so that higher insulin dosage may become necessary or manifestations of latent diabetes mellitus may be precipitated. Corticosteroids may aggravate myasthenic symptoms in myasthenia gravis and should be given with proper precautions.

Muscle weakness, in some instances, attributed to hypopotassemia, has been reported following prolonged systemically administered corticoids. Excessive potassium loss, like excessive sodium retention, is not likely to be induced with effective maintenance

doses of Deltasone (prednisone), however, keep this effect in mind and perform periodic serum potassium determinations in patients on prolonged corticoid therapy. Muscle weakness occurring with normal serum potassium levels may be due to disturbance in muscle metabolism. Severe myopathy is associated with substantial doses of steroids for prolonged periods, and evidence indicates it occurs more frequently with 9-alpha-fluoro steroids. Replacement with non-fluorinated steroid has, in some instances, resulted in improvement.

Retardation of linear growth, roughly proportional to dose, has been noted in children on corticoids for six months or more. Following cessation of therapy, growth rate may be accelerated. Therefore, carefully observe growth of children on prolonged corticoid and if growth is retarded, reduce dose sufficiently to permit recovery before epiphyseal closure. Make every effort to avoid corticoid during pregnancy, since spontaneous remission of some disease such as rheumatoid arthritis may occur. Long term corticoid therapy may evoke hyperacidity or peptic ulcer, therefore, as prophylaxis an ulcer regimen and antacid are highly recommended. Take X-ray in peptic ulcer patients complaining of gastric distress, and whether or not changes are noted, an ulcer regimen is recommended. Since prednisone causes less salt and water retention than many other glucocorticoids, patients should be observed closely for development of undesirable hormonal effects that are less obvious indications of steroid toxicity than edema and hypertension due to salt and water retention. Continued supervision of patients after cessation of therapy is essential, since there may be a sudden reappearance of severe disease manifestation.

Adverse Reactions: Adverse reactions associated with use of corticoids include: Cushing's syndrome, moon facies, supraclavicular fat pads, hirsutism, striae and acne; relative adrenocortical insufficiency particularly in time of stress due to trauma, surgery or severe illness; protein catabolism with negative nitrogen balance; electrolyte imbalance; alteration of glucose metabolism with aggravation of diabetes mellitus including hyperglycemia and glycosuria; osteoporosis reversible only with difficulty; spontaneous fracture; aseptic necrosis of the hip and humerus; activation and complication of peptic ulcer including perforation and hemorrhage; aggravation or masking of infection; increased blood pressure; convulsions; petechiae and purpura; menstrual irregularities including amenorrhea, spotting or prolonged bleeding; insomnia; psychic disturbances especially abnormal euphoria; nervousness; posterior subcapsular cataracts occasionally requiring extraction; increased intraocular tension; increased intracranial pressure with papilledema (pseudotumor cerebri); pancreatitis; necrotizing angitis; thinning of scalp hair; suppression of growth in children; thromboembolic complications; facial erythema; allergic skin reactions; ulcerative esophagitis; sweating; vertigo; weakness; myopathy; headache; exophthalmos. Adverse reactions are usually reversible and usually disappear when drug is discontinued.

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peutic objective is clear, i.e. to develop agents clinically effective in inhibiting platelet sticking and aggregation at the site of the vascular lesion.³ The prospect looks bright, for there are many active antiplatelet agents that can be given for extended periods without increased toxicity and several, including aspirin, dipyridamole and sulfinpyrazone, have been tested in animal models. Still lacking, however, is a human pathologic state with a high prevalence initiated thrombosis in which in vivo efficacy of these agents can be tested and compared quickly under controlled conditions.

Information concerning their in vivo efficacy is necessary before major clinical trials are embarked upon, e.g. the prevention of acute coronary or cerebral thrombosis in high risk population groups. These will require large numbers of patients with observations extending over many years. Most appropriate in this respect would be an arterial lesion such as embolization from valvular prostheses and transient cerebral ischemic attacks. However, surgical developments are restricting the availability of suitable patients. New types of artificial valves are being introduced in the attempt to circumvent thromboembolic disease and other complications, and surgical endarterectomy is being performed more frequently and earlier even when relatively minor carotid vascular lesions are demonstrated by angiography.

Nevertheless, plans are underway to test the effects of aspirin in reducing the frequency of transient ischemic attacks although the studies will take years to complete. There is however no reason for physicians not to use aspirin in patients with either venous or arterial thrombosis if such patients have no contra-indication to its use since aspirin can be given for long periods in appropriate patients without fear.⁴ What a boon it would be if the routine post-operative state with its high frequency of incipient venous thrombosis or certain orthopedic or post traumatic states could be used to provide much needed information about the arterial problem. The method by Salzman and his colleagues could give us much quicker information on the arterial problem and is a ray of hope in this direction.—L.H.N.

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Biologic Changes Affecting Adaptation In Late Life

The human organism consists of three biological components. Two are cellular and one non-cellular or intercellular material. The first component is made up of cells capable of multiplying throughout the life span. Examples of such cells are skin, white blood cells and mucus membranes. The second biological component is made up of cells that are incapable of reproducing, for example the neurone and muscle cell. An example of the third is collagen. Most theories of aging only deal with one of the three components. For example, one which is known as the error theory centers on dividing cells, postulating that new cells in older animals are not as good as the original of the younger animal.

A second group of theories of aging focus on the possibility that irreplaceable cells or non-dividing cells are either totally lost or decline in functioning. The decline in function may be related to exhaustion of available energy or may be the result of accumulation of deleterious material. A third suggested theoretical explanation for aging is damage takes place to the non cellular material of the body that interferes with needed nutritional respiratory material and excretory function. Such a theory applies to collagen which is the most abundant protein in the body.¹ This theory, known as the cross-linkage or eversion theory, holds that with the passage of time there is a switching of the ester bonds from within to between individual collagen molecules. This change alters the characteristics of collagen particularly as it loses its elasticity and connective tissue becomes less permeable.

Scientists and lay people alike recognize that observable changes occur with aging that appear to be relatively universal and the result of inherited characteristics. One accepted change is that a person's body literally shrinks in size. Between the ages of 30-70 years it is estimated that there is a 12 per cent overall decline in body

mass largely attributable to the loss of body cells. Cell loss produces observable changes. For example, a man age 75 is estimated to have lost 64 per cent of his taste buds. Elderly normal subjects are found to have had a change in the capacity to detect odors. The capacity is markedly diminished in 42 percent and slightly diminished in 25 per cent, whereas 32 per cent appear to be the same as young normal subjects. Another common loss is that of teeth at age 65. Fifty per cent of Americans have lost all their teeth. All the contributory factors are difficult to identify but seem to include dental neglect, faulty nutrition, pyorrhea, lack of water fluoridation and autoimmune rejection.

Between young adulthood and age 70 the weight of the brain declines from 10-15 per cent, which amounts to about 10,000 cells per day after age 50. However, the loss of cells is not uniform throughout the brain, certain parts suffering more than others. This suggests that certain functions of the brain are more affected than others. The neurons of the cerebral cortex are particularly vulnerable to cell loss while the more primitive portions of the brain, the brain stem cells, are less vulnerable.

In 1953 Busse² first reported the occurrence of focal abnormalities in approximately 30 per cent of so-called normal individuals over the age of 60. Temporal brain wave changes occur in 30 per cent of elderly people in the form of slow waves and spikes in a few. Most of the foci were found in the left side of the brain, a probable association with righthandedness. Healthy volunteers between ages 20-60 show only 3 per cent to have temporal lobe discharges below age 40, but this rises to 20 per cent between 40-60. Occipital alpha wave frequency is a full cycle slower in these people than in healthy young adults. A good correlation has also been demonstrated between EEG frequency and cerebral oxygen consumption or cerebral blood flow. Thus the slowing of the dominant frequency of most elderly persons may indicate a depression of cerebral metabolism. From longitudinal studies, we know that the presence of a focus in the left anterior temporal region is closely associated with a decline in verbal ability, whereas the diffuse slowing in the occipital rhythm was associated with decline in performance ability.

It is necessary to remember that these findings may be influenced by such factors as levels of arousal, medication and innumerable other

factors or influences that require further study. There appears to be a relationship between EEG frequency and blood pressure as the correlation between these two variables in healthy elderly subjects is highly significant. In individuals with mild and moderate hypertension, a somewhat faster EEG frequency is associated with less evidence of brain disorder. If there is an impairment of cerebral vascular auto-regulation, then the cerebral blood flow would become more dependent on the blood pressure, and a moderate elevation of blood pressure in such an individual would help to preserve the brain. This is not true for severe diastolic hypertension in which there is an actual decline in blood flow.

The loss of brain cells certainly could account for the memory and intellectual decline observed with advancing age. Not all people show evidence of intellectual decline. But these are likely to be genetically well endowed in good health and have a favorable socio-economic status. Contrarily, individuals whose intelligence declines seriously and rapidly are often from the lower socio-economic groups and have much physical disease. It would seem that intelligence may not only be related to heredity, but also be influenced by patterns of living and the better health usually found in the middle and upper social classes. The close relationship between physical and psychological status in old age is particularly relevant since chronic illnesses are prevalent among the aged and the incidence and disability advances steadily. Much of chronic illness is due to individuals' inability to handle infections.

As chronic illness advances, the person's disability prevents social activity and the patient experiences considerable loss in intellectual stimulation and lack of opportunity for learning. There is little doubt that opportunities for learning are important in maintaining intellectual skills.

Since cerebral hypoxia is thought to be a major factor in the impaired performance seen in the elderly with organic brain disease, it was suggested that repeated exposure to hyperbaric O₂ may have a positive effect in cognitive functioning. Some believe it helps but others have not found it so.—L.H.N.

References

1. Verzar, F., Aging Of Collagen. *Scientific American* 208: 104, 1963.
2. Busse, E. W., Biologic And Sociologic Changes Af-

Angina Pectoris And Coronary Collaterals

The degree to which collateral coronary vessels serve to support and protect the heart or to alter the course of a patient with coronary artery disease (CHD) is still a matter of debate. On the basis of extensive post-mortem studies, Blumgart¹ concluded in 1940 that the development of coronary collateral vessels profoundly influences the clinical course of angina pectoris and acute myocardial infarction (M.I.). However, Wiggers could not demonstrate functional collateral vessels in the dog and thought it highly improbable that an adequate blood supply could result from the collateral circulation in the human heart.² Part of this dilemma arose from the fact that visualization of a collateral vessel during life gives no information about the blood flow that this vessel carries.

Helfant³ and his colleagues examined the clinical importance of collateral coronary circulation in a group of patients exhibiting angiographic evidence of CAD. They studied 119 patients by cardiac catheterization and selective coronary angiography. The subjects all had severe disease of a single artery about half of whom showed collaterals and the other half not. An identical percentage of patients with and without collaterals sustained an MI during the follow up period up to 5 years and they found no statistical difference in survival in either group.

There thus appears to be a fallacy in believing that arteriographic visualization of collaterals in the coronary circulation of patients with angina is a favorable sign. There is little difference in myocardial nutrition as measured by several different objective methods between angina patients whose collaterals could be visualized and those whose vessels could not. How can one reconcile then results with the innumerable studies in animals⁴ that have shown development of collaterals to be an important factor in recovery from coronary occlusion? When a major coronary artery is constricted slowly over several weeks, collaterals develop even in this short time and measurements of backflow through the collaterals show that much more blood flow is available than is required for the resting myocardium.

There is no reason to believe that collateral circulation does not develop in human hearts as readily as in animal hearts and this occurrence seems to be borne out in Blumgart's reports. Some collaterals might be large, some small; some visualizable by arteriography, and some not. However, the presence of both high grade arterial obstruction and evidence for myocardial ischemia in some patients without a collateral circulation suggests that additional factors may promote or inhibit collateral development. One possibility is that there has been total destruction and replacement fibrosis of cardiac muscle formerly supplied by this artery so that there is now no need for direct blood flow. There may also be other factors yet unknown that inhibit collateral development.

Yet CAD is a progressive phenomenon and there are limits to the extent that collateral circulation can occur. One might assume that a patient with CAD eventually reaches a stage at which he has run out of further development of collaterals. In a young animal there seems to be a general law that the degree of vascularization will adapt itself almost exactly to the needs of the tissue. In most tissues, delivery of oxygen is one of the major factors that determines the degree of vascularization. Patz's⁵ studies demonstrated this principle of the control of tissue vascularization, by showing day to day re-architecturing of the vasculature in response to tissue changing needs of oxygen.

These effects also occur in older animals but to a progressively less extent with advancing age, indicating that the ability of the vasculature to adjust itself to needs of the tissues has its highest development in the infant; with age the capability diminishes. We could therefore suppose that in many patients with angina if not most, the process of collateral circulation has already developed in the earlier stages of his coronary disease and that finally he has run out of capacity for revascularization.

If this hypothesis is true, the symptom of angina should itself be diagnostic of an end to development of collateral circulation, and one would expect little prognostic difference whether the previously developed collaterals were large or small. This concept is consonant with results observed by Helfant, Vokonas and Gorlin.

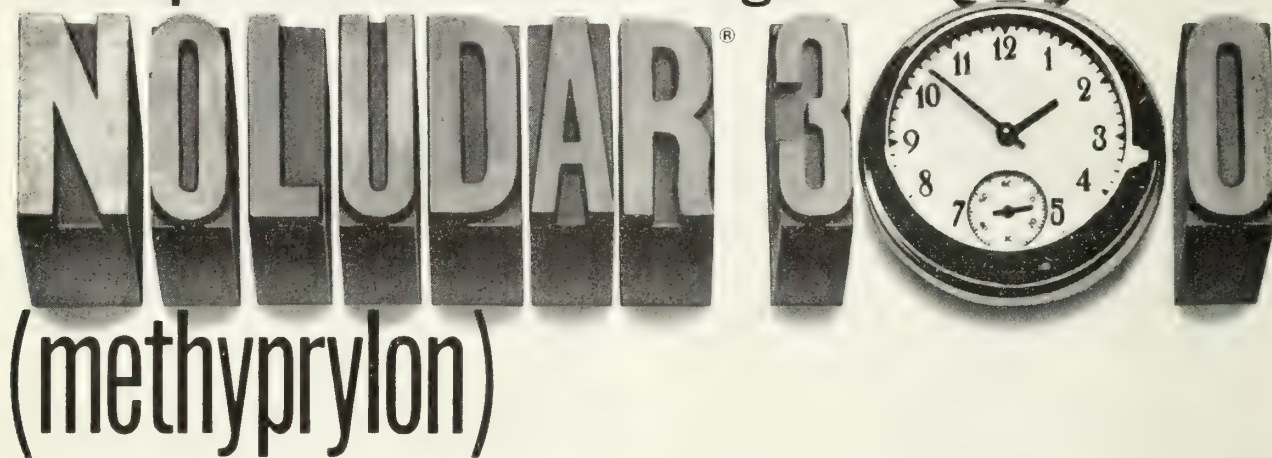
The most important clinical benefit that can occur from collateral vessels is whether or not they offer protection from MI or death. They

did not in Helfant's studies appear to protect the patient against the development of MI either before or after the study. However, the degree to which collateral circulation may obviate serious consequences of coronary occlusion is uncertain. It is possible that they protect against lethal outcome of MI attacks. This hypothesis is consistent with pathologic observations that collateral vessels limit the extent but not prevent MI. The "protective" effect of collateral circulation may be a function not only of whether frank coronary occlusion occurs but also how quickly it develops. If obstruction develops slowly, there may be time for collateral vessels to supervene and support distant areas of the myocardium.—L.H.N.

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1. Blumgart, H. L., Schlesinger, M. J. and David, D., Studies on the Relation of the Clinical Manifestations of Angina Pectoris, Coronary Thrombosis and Myocardial Infarction to the Pathologic Findings: With Particular Reference to the Significance of the Collateral Circulation. *Am. Heart J.* 19: 1, 1940.
2. Wiggers, C. J., The Functional Importance of Coronary Collaterals. *Circulation* 5: 609, 1952.
3. Helfant, R. H., Vokonas, P. S. and Gorlin, R., Functional Effect of Human Coronary Collateral Circulation. *New Engl. Jr. Med.* 284: 1277, June 10, 1971.
4. Khouri, E. M., Gregg, D. E. and McGranahan, G. M., Jr., Regression and Reappearance of Coronary Collaterals. *Am. J. Physiol.* 220: 655, 1971.
5. Patz, A., The Effect of Oxygen on Immature Retinal Vessels. *Invest. Ophthalmol.* 4: 988, 1965.

one capsule for the rest of the night



Before prescribing, please consult complete product information, a summary of which follows:

INDICATION: Relief of insomnia of varied etiology.

CONTRAINDICATIONS: Patients with known hypersensitivity to the drug.

WARNINGS: Caution patients about combined effects with alcohol and other CNS depressants. Caution against hazardous occupations requiring complete mental alertness, such as operating machinery or driving a motor vehicle shortly after ingesting the drug.

Physical and Psychological Dependence: Physical and psychological dependence rarely reported. If withdrawal symptoms do occur they may resemble those associated with

withdrawal of barbiturates and should be treated in the same fashion. Use caution in administering to individuals known to be addiction-prone or those whose history suggests they may increase the dosage on their own initiative. Repeat prescriptions should be under adequate medical supervision.

Usage in Pregnancy: Weigh potential benefits in pregnancy, during lactation, or in women of childbearing age against possible hazards to mother and child.

PRECAUTIONS: If sleeplessness is pain-related, an analgesic should also be prescribed. Perform periodic blood counts if used repeatedly or over prolonged periods. Total daily intake should not exceed 400 mg, as greater amounts do not significantly in-

crease hypnotic benefits.

ADVERSE REACTIONS: At recommended dosages, there have been rare occurrences of morning drowsiness, dizziness, mild to moderate gastric upset (including diarrhea, esophagitis, nausea and vomiting), headache, paradoxical excitation and skin rash. There have been a very few isolated reports of neutropenia and thrombocytopenia; however, the evidence does not establish that these reactions are related to the drug.

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SUMMARY OF ACTIONS

Wednesday, July 14, 1971

I. ATTENDANCE

Present in addition to the Vice-Chairman, Dr. D. A. Grendon, were: Drs. Weber, Jr., Cramer, Spitz, Backhus, Nolan, Gardner, Fabro, Hess, Rem, Johnson, Ragland, Jr., Harwood, Pelz, Roch, Van Syckle, Luby, Harkins, Root, Jr., vonGlahn, Dambeck and Klare.

Also present: Mrs. Lindquist, Mr. Bugar (AMA), Mr. Gordon (HCMA), Mr. Tomat, Mr. Sullivan and Dr. Richards.

Absent were: Drs. Brandon, Granoff, Dean, Bradley, Wilson, Palomba, Nemoitin, Friedberg, and LaBella.

II. ROUTINE BUSINESS

Approval of Minutes

As presented and distributed, it was VOTED to approve the minutes of the meeting of June 17, 1971.

Life Memberships

It was VOTED to approve applications for Life Membership received from the following eligible Active Members:

H. Everett Allen, The Elton, 30 West Main Street, Waterbury—(NHCMA)—1/1/71

David T. Monahan, 2660 Main Street, Bridgeport—(FCMA)—1/1/71

Student Membership

It was VOTED to elect to Student Membership the following students who are enrolled at the medical schools indicated:

John M. Demicco, 3 Ashland Street, Jewett City, Emory University, Class of 1974, Pre-Med: College of the Holy Cross, Parent: Dominic D. Demicco.

Anthony Luciano, 626 Wolcott Street, Waterbury, University of Connecticut, Class of 1973, Pre-Med: University of Connecticut; Parent: Genaro Luciano.

Date of Next Meeting

The next meeting of the Council will be held on Thursday, August 19, 1971.

III. OLD, NEW AND SPECIAL BUSINESS

Resignations, Appointments, etc.

(a) *Committee on Public Affairs*: It was VOTED to appoint Leonard Flom, Fairfield, to membership on this Committee, 1971-72.

(b) *Nominees, Board of Directors, CUPIS, Inc.*: It was VOTED to confirm the nomination of Frederick C. Weber, Jr., Greenwich, as the CSMS-designate on the CUPIS Board for the term July, 1971-June, 1972. Dr. Weber has already been elected to Board membership, substituting *pro tem* for Marvin Garrell, Fairfield, who declined this nomination. It was further VOTED to submit the name of O. Joseph Bizzozero, Jr., Waterbury, as a nominee for at-large CUPIS Board membership (subject to his consent).

(c) *Invited Guests of the Council*: It was VOTED to accept as information, and with thanks, a letter from John W. Patterson, Hartford, advising the Council that he has stepped down as Dean of the UConn Medical School and accepted the posts of Executive Secretary of the UConn Health Center and Vice-President of the University for Health Affairs. Dr. Patterson expressed appreciation for having been invited to attend and participate in meetings of the Council for the past several years.

It was further VOTED to extend to Robert U. Massey, Newington, an invitation to attend and participate in meetings of the Council as a guest. Dr. Massey has been appointed Acting Dean of the UConn Medical School.

(d) *Connecticut (Medical) Advisory Committee to the Selective Service System*: It was VOTED to request three nominees of the NHCMA Board of Governors to serve as members of this Committee as follows:

George A. Bonner, New Haven, Chairman
Frederick H. Treder, Woodbridge
Lycurgus M. Davey, New Haven

The function of the Committee is to advise the Selective Service System (Local Draft Boards)

as to the essentiality to patient care of draft-eligible physicians who are in practice or serving as interns and resident in Connecticut. The retiring Chairman, William R. Richards, New Haven, will continue to serve on the Committee as secretary and, with office staff assistance, assume responsibility for carrying on the Committee's administrative duties.

Report—Committee on Cooperation with Medical Schools

Edward Nichols, Hartford, Chairman of this Committee, joined the Council to make a presentation concerning the needs of medical students at the Yale and UConn Schools for financial aid, and to elaborate on a request of the Committee that the Council consider establishing some sort of financial aid program (such as a one-year, trial donation of \$5,000 to each of the medical schools to be used to assist deserving students on a pay-back loan basis). It was VOTED to thank Dr. Nichol's for joining the Council and to commend him for the excellence of his presentation. It was further VOTED: That the Council approve, in principle, the concept of the Society contributing to a financial aid fund in support of medical students at the Yale and UConn Schools, and request that the Committee on Cooperation with the Medical Schools of Connecticut work out the details of such a program for submission to the Council for approval, and, if approved, for submission by the Council to the House of Delegates for consideration and action.

Communication—President, Section on General Practice

In a letter addressed to the Chairman of the Council, John C. Wright, Manchester, president of the Section on General Practice, brought to the attention of the Council an instance in which he felt a statement made by a spokesman for the Society in responding to a *Hartford Courant* column, was derogatory or demeaning to members of the Society practicing general medicine, and requested that "the Council establish an official policy that all elected officers and all members of the staff take every possible precaution to see that their public statments do not reflect adversely on one (any) section of our medical society".

Having reviewed all aspects of the instance presented by the Section president, the Council VOTED to advise Dr. Wright that it has been, and is, the policy of the Council, that the elected officers and the staff take every possible precaution to assure that their public statements are in good taste, accurate and not subject to interpretation

by anyone as reflecting adversely on the Society or any of its members.

Report—Committee on Postgraduate Education

A report of this Committee was received and discussed at considerable length, the subject of the report being a proposed method of implementing the House of Delegates action (4/27/71) supporting the concept of continuing medical education as a contingency of continuing membership in the Society and in the component County Associations and charging the Committee with developing "a system of CSMS-sponsored and/or CSMS-approved programs of continuing medical education designed to make practical the implementation of such concept as a primary responsibility of the County Medical Association.

Because a number of questions were raised concerning the feasibility of County Association administration of the implementation proposal advanced by the Committee, and because these questions were unanswerable within the expertise of the members of the Council, it was VOTED to refer the report back to the Committee for further study.

Report—Committee on Maternal Morbidity and Mortality

It was VOTED to accept as information a report filed by this Committee on its reconsideration of the Committee's previous position on the subject of utilizing available obstetrical service beds for the diagnosis and treatment of patients other than "clean gyn cases" under the care of qualified obstetrician-gynecologists. In brief, the Committee reaffirmed its previous and longstanding position that the subject use of such available beds should continue to be limited to "clean gyn cases" (excluding "clean" cases of any other kind). A minor change in the Committee's previous position was noted; i.e., "that if a surgeon has gyn privileges, he should be allowed to use obstetrical facilities for his clean gynecological surgery".

Stuart Ragland, Jr., Colebrook, informed the Council that arrangements will be made shortly for his Ad Hoc Committee to meet with the Public Health Council to explain and advance the Society's position (set by the House of Delegates) that available obstetrical beds should be sanctioned for admission of all types of clean cases (surgical or medical) under the care of qualified practitioners of all types.

Resolution re Boxing—Committee on Accident Prevention

Noting that the Governor had vetoed a bill to again legalize professional boxing in Connecticut,

and expressing disagreement with some of the opinions stated in a subject resolution submitted by the Committee on Accident Prevention, the Council VOTED *not* to adopt a resolution which would have put the Society on record as "opposing any change in the statutes banning professional boxing in Connecticut".

Recommendation—Committee on Third Party Payments

Apprising the Council that Connecticut Blue Cross is forming "a Medical Advisory Committee to CBC (of) twelve actively practicing physicians who will represent the various specialties in medicine and surgery throughout Connecticut and will be available to work with (CBC) on corporate policy matters, including utilization review", the Committee on Third Party Payments made a recommendation concerning the formation of such a Medical Advisory Committee. With minor amendment, it was VOTED to approve the Committee's recommendation as follows:

That the Council communicate to Connecticut Blue Cross a request that up to six of the twelve physicians members of the CBC Medical Advisory Committee be designees of the Connecticut State Medical Society.

Remarks of Joseph A. Sabatier, Jr., M.D.

The Council was privileged to be joined at this meeting by Dr. Joseph A. Sabatier, Jr., Chairman of the AMA Committee on Quackery, who had honored a request of the Council to come to New Haven on July 14, 1971, to appear on an interview program on Channel 8, WTNH-TV. Many members of the Council had viewed the program and expressed commendation to Dr. Sabatier for the excellence of the manner in which he presented Medicine's case against medical quackery—particularly against chiropractic.

Dr. Sabatier summarized for the Council the key points of the AMA's position on chiropractic and outlined some of the arguments that can be used most effectively in support of this position and to counter the arguments most frequently advanced by the other side. In capsule form, his advice was: "Lay the blame on the *sin* (chiropractic) rather than on the *sinner* (chiropractors)". It is the complete lack of scientific basis for the chiropractic method and course of education that cannot stand up under public scrutiny. This is the main point we have to get across to the public and to legislators.

N.B.: *The foregoing is a summary of the proceedings and action of the Council on July 14,*

1971. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by an interested member of the Society.

Placement Wanted

Allergy-Internal Medicine—32 years of age, Eligible with National Boards, wishes solo, group, associate or institutional type practice in a large or medium size community in Connecticut. Connecticut license. Contact Robert E. Weinstein, M.D., Department of Allergy, Henry Ford Hospital, Detroit, Michigan.

General Practice—Physician interested in an associate, industrial or group type practice in a medium size community in Connecticut. Connecticut license. Presently in practice. Available immediately. Contact: Elliot S. Phillips, M.D., 1803 Crawford Street, Houston, Texas.

General Practice—42 years of age, with National Boards, wishes institutional type practice in Connecticut. Presently in practice. Main interest is in salaried position, possibly in institution (e.g., house physician, surgeon assistant, emergency room). Prefer position near Stamford area. Available immediately. Contact Richard Updegraff, M.D., 2724 Farragut Avenue, Chicago, Illinois 60625.

Industrial or School Physician—44 years of age, Eligible. Part-time or full-time in reasonable proximity to New Haven-Cheshire-Meriden-Wallingford area. Presently solo, family practice in small Connecticut community. Connecticut license. Available immediately.

Internal Medicine-Nephrology—32 years of age, Eligible with National Boards, wishes group (possibly associate) type practice in Connecticut. Connecticut license. Available immediately. Contact Paul Balter, M.D., Renal Unit, 3rd Field Hospital, APO San Francisco 96309.

Internal Medicine—29 years of age, National Boards, wishes group, associate or institutional type practice in Connecticut. Presently in practice. Military obligation completed. Available immediately.

Internal Medicine-Cardiology—33 years of age, Eligible with National Boards, wishes group, associate or institutional type practice in Connecticut. Available immediately.

Internal Medicine—46 years of age, Eligible with National Boards, wishes solo, group, associate or institutional type practice in a large, medium or small community in Connecticut. At present time retiring after 20 years of Naval duty as Chief of Medicine and Executive Officer of Naval Hospital. Available immediately. Contact Stuart H. Martin, M.D., Otrs. 2, Naval Hospital, Annapolis, Maryland 21402.

Internal Medicine-Chest Diseases-Pulmphysiology—40 years of age, Eligible, wishes group or institutional type practice in a large or medium size community in Connecticut. Presently in practice. Available immediately. Contact: Gilao D. Renzi, M.D., 1681 Rachel Est. Montreal 177 Quebec Canada.

Internal Medicine—40 years of age, Eligible, wishes group, associate or industrial type practice in a medium or small size community in Connecticut. Has one year of pulmonary

disease training. Available immediately. Contact Frank Ruzicka, M.D., 5166 N. Lovers Land Road, A14, Milwaukee, Wisconsin 53225.

Internal Medicine-Hematology-Oncology — 30 years of age, Eligible with National Boards, wishes group, associate or institutional type practice in Connecticut. Available immediately.

Neuro-Surgery—32 years of age, Eligible with National Boards, wishes group or associate type practice in a large or medium size community in Connecticut. Available immediately.

Neurology—33 years of age, Eligible with National Boards, wishes solo, group or associate type practice in Connecticut. Physician is seeking a practice or salaried position combining Neurology with Rehabilitation Medicine, thereby utilizing training in both fields.

Ophthalmology—28 years of age, Eligible, wishes associate, solo, institutional or industrial type practice in a medium or large community in Connecticut. Available immediately. Contact: Kanwar A. Singh, M.D., 9624 Abaco Ct., St. Louis, Mo. 63136.

Orthopedic Surgery—34 years of age, Eligible, wishes associate type practice in Connecticut. Special training in spine and hand surgery. Available immediately.

Otolaryngology—32 years of age, Certified with National Boards, wishes solo, group, associate or institutional type practice in a large community in Connecticut. Available immediately. Contact Melvin J. Gunsberg, M.D., Box E, DeWitt Army Hospital, Fort Belvoir, Virginia 22060.

Pediatrics—41 years of age, Eligible, wishes associate type practice in a large community in Connecticut. Presently in practice. Connecticut license. Available immediately. Contact Sobhy L. Ghabrial, M.D., 100 Milligan Road, West Babylon, New York 11704.

Pediatrics-Hematology—35 years of age, Eligible, wishes solo, group or institutional type practice in a medium size community in Connecticut. Available immediately. Contact Chi-Yen Kuo, M.D., 20 St. Paulis Court, Apt. 1D, Brooklyn, New York 11226.

Surgery—Thoracic—33 years of age, Certified, wishes solo, group, associate or institutional type practice in a large community in Connecticut. Available immediately.

Surgery—General and Vascular—33 years of age, Certified, wishes solo, group or associate type practice in a medium or small size community in Connecticut. Presently in practice. Would prefer location near Long Island Sound. Available immediately. Contact Joseph A. Bardenheier, III, M.D., 34 Bayside Avenue, Newport, Rhode Island 02840.

Surgery—32 years of age, Certified, wishes solo, group or associate type practice in Connecticut. Presently in practice. Available immediately. Filed for Connecticut license.

Surgery—36 years of age, Certified, wishes group or associate type practice in a large or medium size community in Connecticut. Would consider thoracic and cardiovascular surgery. Military obligation completed. Available immediately.

General Surgery—34 years of age, Eligible with national Boards, wishes solo, group or associate type practice in Con-

necticut. Available immediately. Contact: Samuel J. Mazza, M.D., 4 Daybrook Drive, Apt. 114, Ayer, Mass. 01432.

Surgery—37 years of age, Certified, wishes solo, group, associate, or institutional type practice in a large or medium size community in Connecticut. Presently in practice. Available immediately. Contact A. K. Patel, M.D., Box 70, Inverness, Nova Scotia, Canada.

Surgery—Vascular—36 years of age, Eligible, wishes associate or institutional type practice in Connecticut. Available immediately.

Placement Opportunities

Emergency Department Physician—Full time on or about September 1, 1971 to join well-established hospital group. Connecticut license essential. Contact Administrator, Meriden-Wallingford Hospital, 181 Cooke Avenue, Meriden, Connecticut 06450. (203) 238-0771.

General Medicine—Opportunity in Connecticut shore community few miles from New Haven. Fully established practice. Office equipped for electro-cardiography and x-ray. Contact Mrs. Michael J. Carpinella, 48 Kirkland Street, Branford, Connecticut (1-203-488-3557).

General Practice — Southern Connecticut (Darien) within striking distance of either New Haven or New York on Long Island Sound is in need of a General Practitioner. A suite of offices with five rooms, two girls who are familiar with the practice who will be willing to stay and introduce the newcomer, and an apartment above containing six rooms that could be used as living quarters. The practice consists of no obstetrics and no surgery; and in the area admission privileges at hospitals are easy to obtain. For further information contact: James V. Macgregor, M.D., 2 Queen Lane, Darien, Connecticut 06820.

General Practitioner Preferred—Staff position(s) with company in Hartford area. Advisory in nature. Non-diagnostic. Non-clinical. Connecticut license required. 20-25K range. Contact William A. Larson (203) 547-0900.

Internist—A third internist is needed to join two other internists in the town of Manchester. Office located across the street from a 300 bed community hospital which is currently in the second of a three stage building program. Manchester is located fifteen minutes from Hartford, one hour from New Haven, one hour and a half from Boston and two hours from New York City. For further information contact: Harold J. Lehmus, M.D., or David L. Warren, M.D., 56 Haynes Street, Manchester, Connecticut 06040. Telephone 203-646-1167.

Internist or Generalist for full time position as staff physician to run 25-bed unit in 98-bed rehabilitation hospital in Connecticut. Full time staff includes psychiatrists and internists. Salary range, \$26,500-\$32,500, depending upon qualifications and experience. One month vacation and other benefits. Box 400, Wallingford, Connecticut 06492.

Staff Physician—Full time staff physician wanted for the Masonic Home and Hospital, Wallingford, Connecticut. A geriatric and chronic disease hospital, fully licensed and accredited. Excellent salary, a quiet life, good research possibilities. Connecticut license required. Contact Kurt S. Pelz, M.D., Executive Director or Ulrich K. Rathey, M.D., Medical Director at the Masonic Home and Hospital. (203) 265-0931.

Pediatrician: Seven Pediatricians in Manchester urgently need board certified or eligible Pediatrician to replace Doctor leaving for further training. Excellent coverage arrangement, ample time off. Contact Winfield H. Moyer, M.D., 36 Haynes St., Manchester, Conn., 203-646-0313.

Connecticut—Psychiatrists and Physicians to work in one of several newly developed specialized programs—drug dependence, alcoholism, geriatric rehabilitation, and general psychiatry. The setting is dynamic, decentralized and community-oriented. A training hospital with University affiliations with Wesleyan and Yale. Opportunity for private practice or consultation. Salary commensurate with experience and training. Starting salary range: Psychiatrist \$20,465-\$29,479; Physician \$18,826-\$27,482. Liberal benefits. Eligibility for Connecticut license required. Send all particulars in first letter including references to: Mehadin K. Arafeh, M.D., Superintendent, Connecticut Valley Hospital, Box 351, Middletown, Connecticut.

Radiologist — Increasing staff. New department with nine fully equipped rooms after January 1, 1972. General hospital 375 beds fully accredited find location seashore city. Board certified or eligible in both radiology and nuclear medicine. Full time position. Remuneration open. For further information write: Fred J. Fagan, M.D., Director, Department of Radiology, Lawrence and Memorial Hospital, Montauk Avenue, New London, Connecticut 06320.

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CORRESPONDENCE

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Dear Dr. Nahum:

Many of your readers will remember Dr. Bal Krishan Anand who spent a year in the Laboratory of Physiology at Yale in 1950 and 1951 and did important work on the localization of autonomic function in the brain.

I attended the International Congress of Internal Medicine at New Delhi last fall and was royally received by Dr. Anand and his family. When the All-India Institute of Medical Sciences was established in 1956, he was called to the Chair of Physiology there and has recently been made Dean of the Institute. He has introduced methods and instrumentation in neurophysiology which are now used throughout the country. He has trained many of the professors of physiology at other institutions in India and his department has continued the investigations into the neural control of feeding mechanism that he began while at Yale. He has received many honors and awards in his own country and abroad, and is one of the outstanding leaders of medical science in India.

He remains the same unassuming and charming person that we knew in his association with us in the Laboratory and sends his greetings to all his friends and colleagues in Connecticut. Your readers may be interested to know of Dr. Anand's achievements and his close feelings of association with Connecticut physicians.

Very truly yours,

Herbert Levine, M.D.

Associate Chairman
Department of Medicine
Middlesex Memorial Hospital,
Middletown, Conn.

Anesthesiology Grand Rounds

Yale-New Haven Hospital

The Carcinoid Syndrome

Samuel M. Lerner, M.D. and Frederick W. Hehre, M.D., Editors
Allan L. Toole, M.D., Discussant

Dr. Samuel M. Lerner:

The anesthetic significance of carcinoid neoplasms depends on the pharmacologic effects of elevated blood levels of bradykinin. This polypeptide causes vasodilation with subsequent hypotension and tachycardia. The induction of anesthesia may provoke a paroxysm of flush, hypotension, and severe bronchospasm. The preoperative diagnosis of carcinoid tumor may be difficult since (1) the tumor is not restricted to the gastrointestinal tract; (2) urinary excretion of 5-hydroxyindole acetic acid, the classic diagnostic test, may not be increased and; (3) The typical history of attacks of flush, bronchospasm and diarrhea may not be obtained.

Case Presentation

A 34 year old female was admitted to Yale-New Haven Hospital for treatment of scalenus anticus syndrome. She had noted the onset of right shoulder and arm pain aggravated by stretching 1½ years prior to admission. A chest X-ray one year ago showed a pulmonary infiltrate suggestive of infarction. Past history revealed that at age 14 the patient underwent an appendectomy under general anesthesia without incident, and at age 21 the patient received trichloroethylene analgesia for delivery of her only child, at which time she developed diffuse flush, hypotension, and tachycardia. Subsequently the patient was aware of paroxysms of flush occurring spontaneously or which were provoked by ingestion of alcohol and coffee, and by smoking.

These attacks were frequently associated with shortness of breath and difficulty in breathing, but without diarrhea.

Physical examination was unremarkable except for tenderness over the right trapezius and scalene muscles. Her blood pressure was 130/80 mmHg, pulse rate 84. Hematocrit 38%. Cervical myelogram was negative. The patient was scheduled for a right scalenotomy. Pre-medication consisted of morphine 15 mg, secobarbital 100 mg, and atropine 0.6 mg. On arrival in the operating room her pulse rate was 150 beats per minute, blood pressure of 130/100 mmHg and her face and neck were severely flushed. Operation was postponed to evaluate the flush and tachycardia. Thyroid function tests, intravenous pyelogram, electrocardiogram and 5-HIAA levels were within normal limits and the operation was re-scheduled. Pre-medication this time consisted of diazepam 20 mg, pentobarbital 100 mg, and atropine 0.4 mg. Pulse rate prior to induction of anesthesia was 80 and the blood pressure was 160/90 mmHg. That patient reacted to a test dose of thiopental 50 mg with diffuse flush of the head, neck and shoulders, a pulse rate of 166 and blood pressure of 120/70 mmHg. The operation was cancelled.

The anesthesiologist in attendance recommended that this patient be referred for further work-up to Dr. Allen Toole of the Section of Cardiovascular Surgery with a presumptive diagnosis of bronchial carcinoid.

Dr. Toole, would you please discuss bronchial carcinoid?

Dr. Allan L. Toole:

Although this particular patient has not consented to further examination, her history of paroxysms of flushing and a questionable lung lesion is typical and quite similar to another patient whom I recently operated upon. This second patient, a 58 year old white female, noted the onset of

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From the Division of Anesthesiology and the Department of Surgery, Yale University School of Medicine, and, the Departments of Anesthesiology and Surgery, Yale-New Haven Hospital.

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pulmonary symptoms of mild dyspnea, hoarseness and episodic cough in 1965. Multiple peripheral pulmonary nodules were noted in the right lung at that time. In 1967 thyroidectomy was performed for a multinodular goiter with a substernal component. The pulmonary symptoms continued and the pulmonary nodules remained unchanged and undiagnosed. Later in 1967 she complained of episodes of generalized warmth and flushing, but the urinary 5-HIAA was within normal limits. Repeat chest laminograms suggested an increase in the size of the pulmonary nodules. Thoracotomy was performed. Middle lobectomy, two wedge resections of the lower lobe and one wedge resection of the upper lobe was done to remove all palpable nodules from the right lung. On pathological examination the tumors appeared to originate from within bronchioles and extend into adjacent peribronchiolar tissues. There were eleven tumors within the middle lobe. The pathological diagnosis was multiple peripheral carcinoid tumors. The sensations of warmth and flushing disappeared immediately after surgery and the patient has remained asymptomatic.

Pathologically, Huebschmann in 1910 proposed that intestinal carcinoid tumors were endocrine tumors originating from the Kultschitzky cells.¹ Gosset and Masson in 1914 described the silver-staining properties of the cytoplasmic granules.² Gmelich, Bensch and Liebow using electron microscopy confirmed the histogenesis of peripheral bronchial carcinoids by demonstrating argentaffin cells of the Kultschitzky type composing the tumor itself and also in the lining membrane of bronchioles.³ Bensch, et al. had previously demonstrated these cells in normal bronchial glands and as the dominant component of carcinoids arising in larger bronchi.⁴

These tumors show slight predilection for the lower lung lobes and commonly occur at bronchial bifurcations. They may be polypoid or present as an infiltrating "iceberg" lesion. Although 90% are visible by bronchoscopy, multiple peripheral lesions may occur which corresponds to reports of multicentric origin of extra-appendiceal carcinoids. Bronchial carcinoids have been reported in the pediatrics, as well as the geriatric age group. Hemoptysis is the chief complaint in 50% of cases. The remainder present with abnormal routine chest films and acute or chronic respiratory problems. Coughing and wheezing are important symptoms. Clubbing of the fingers may occur. Calcification due to osseous metaplasia has been described, and

is, a consideration in the differential diagnosis of benign appearing calcified nodules. Metastases to regional nodes, liver and bone are not uncommon.

Bronchial biopsy is important and should not be withheld because of possible bleeding.

The production of "ectopic" hormones by a wide variety of tumors has been reported. Tumors whose cells of origin are bronchial argentaffin, gastric argentaffin, pituitary basophil, thyroid parafollicular, thymic epithelial, pancreatic islet, and pheochromocytes produce on occasion any hormone produced by any other in the group such as serotonin, kinins, histamine, growth hormone, corticotrophin, parathormone, glucagon, gastrin, insulin, melanotrophin, antidiuretic hormone, epinephrine and nor-epinephrine. Williams explains these tumors' functional capacity in terms of cell control by desoxyribonucleic acid. He postulates a common type of desoxyribonucleic acid (Type 3) which can be changed to a functioning type (Type 2) in response to a specific effector metabolite to produce hormones in a controlled way or in the absence of the effector metabolite, in an autonomous fashion. His hypothesis is supported by the association of bronchial carcinoids with all the above hormones.⁵

Treatment

Patients with bronchial carcinoid tumors run a spectrum of survival from 33 years without therapy, to rapid progression with fatal outcome. The average duration is in the range of eight years.

Surgical therapy with complete excision, is the treatment of choice. Lobectomy with removal of contiguous nodes is common, but pneumonectomy may be necessary. Sleeve resection of the bronchus may be done when there is no better chance of cure with parenchymal resection, or, when inadequate pulmonary reserve may result. Bronchoscopic removal may be indicated in unusual cases. Peripheral and multiple lesions pose a different problem but we adhere to the principle of complete excision whenever possible. This also pertains to noncurative and cases with metastases. Cardiopulmonary bypass has been used when dealing with proximal lesions. Carcinoid heart disease has been directly treated with poor results, and reports on the results of radiation therapy have been fragmentary and contradictory, as has been chemotherapeutic results.

The relative rarity and long natural history of these tumors makes evaluation of any form of therapy difficult.

Dr. Samuel M. Lerner: Bradykinin is a naturally occurring polypeptide which has been implicated

in a number of pathological conditions such as pancreatitis, arthritis, asthma, endotoxin shock, migraine headaches, and the carcinoid syndrome.

Pharmacologically, bradykinin is the end product of a series of reactions in the plasma (Fig. 1). Activated Hageman factor causes the restructuring of the kallikreinogen molecule to form kallikrein, a highly specific enzyme whose only known substrate is kininogen, an alpha-2-globulin present in plasma. Kallikrein converts kininogen to bradykinin. Kallikreinogen is present in plasma and the mucosa of the bronchi, intestines, stomach, pancreas, and salivary glands. Carcinoid tumors contain large amounts of kallikreinogen.

The physiological role of bradykinin is not clear. Melmon suggested that kallikreinogen is activated at birth and that subsequently released bradykinin is responsible for the constriction of the umbilical vessels, the ductus arteriosus, and dilation of the pulmonary vasculature.⁶ There is also evidence that bradykinin is the mediator of the functional vasodilation seen in the inflammatory reaction.

Bradykinin, when administered intravenously causes vasodilation, increased vascular permeability, smooth muscle contraction, and hypotension. This pattern is similar to that seen in the carcinoid syndrome. Oates found that kallikrein levels increased 800% during paroxysms of flushing in carcinoid patients.⁷ It seems probable that the carcinoid tumor releases kallikrein which activates the bradykinin system in the plasma resulting in vasodila-

tion, hypotension and bronchospasm. An interaction with serotonin is possible. Anesthetic agents stimulate the release of kallikrein from carcinoid tumors resulting in a sudden elevation of blood levels of bradykinin, and carcinoid crisis with severe hypotension and bronchospasm which may be life threatening.

Ureles studied the effect of various pharmacologic agents on the symptomatology of the carcinoid syndrome.⁸ Serotonin antagonists have proved of little value, but repeated administration of methylprednisone caused cessation of attacks of flushing. Kellerman reported that corticosteroids prevent the release of bradykinin by the kallikrein system.⁹

Dr. Gillis, would you comment on the availability of bradykinin antagonists?

Dr. C. Norman Gillis: There are no kinin antagonists. Trasylol inhibits kallikrein which is the enzyme precursor of bradykinin.

Dr. Toole: Trasylol has been used in patients with the carcinoid syndrome but with no amelioration of symptoms.

Dr. Gillis: Parachlorophenylalanine is a serotonin antagonist which has successfully controlled diarrhea in carcinoid patients. This agent has received a good deal of publicity recently since it has been shown to increase sexual activity in rats.

Dr. Etsuro Motoyama: Is bradykinin cleared through the lungs?

Dr. Gillis: Yes, it is very effectively removed by the lungs, almost as effectively as serotonin. Which

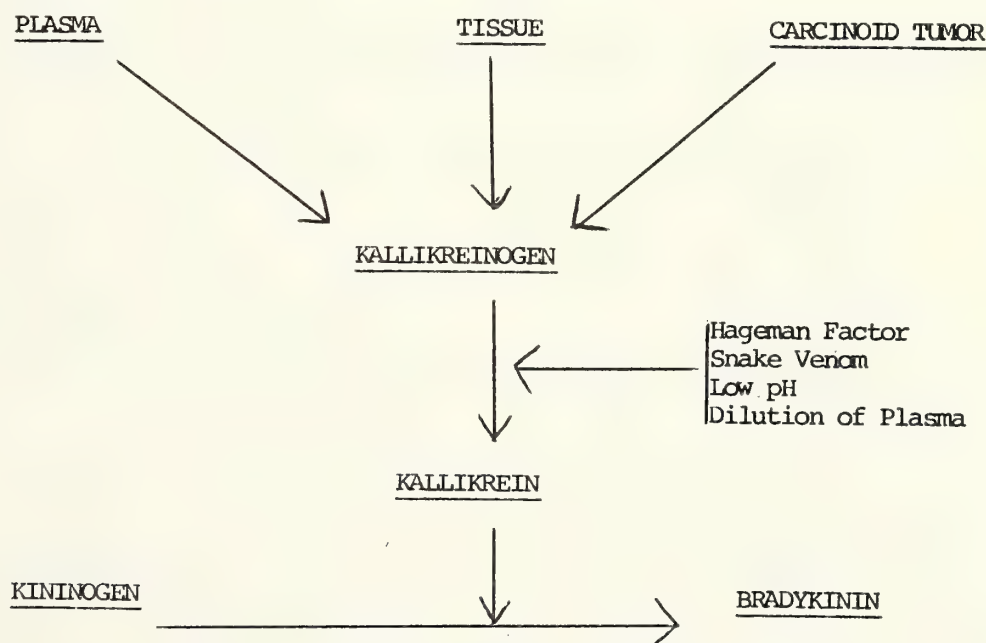


Figure 1

Factors leading to the enzymatic conversion of kininogen to bradykinin is the plasma.

leads to the question: if you have a tumor in the lungs that is secreting bradykinin, serotonin or both, do you see left sided heart lesions?

Dr. Toole: Yes. Both left and right sided heart lesions which are not associated with intracardiac shunt. Intestinal carcinoid as well as bronchial carcinoid may develop either left or right sided heart lesions.

Dr. Luke Kitahata: Bradykinin can produce pain. Do carcinoid patients complain of pain?

Dr. Toole: One of our patients complained bitterly of pain in his salivary glands and his ear, but I cannot recall any incidence of generalized pain.

Dr. Nicholas M. Greene: The relationship of bradykinin to pain is based on the tissue or cellular levels of bradykinin. Intravascular bradykinin does not produce pain and I would not expect elevated levels of bradykinin in the blood to result in pain. What is the relative incidence of bronchial carcinoid compared to intestinal carcinoid?

Dr. Toole: Intestinal carcinoid is more frequent. Bronchial carcinoids represent between 1%-2% of resected pulmonary specimens.

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Special Article

Weir Mitchell's Address On Instrumental Precision In Medicine In The Perspective Of 70 Years

Hebbel E. Hoff, M.D., Ph.D.

I

Introduction: From Hartford to Camelot

"I asked him how far we were from Hartford. He said he had never heard of the place; which I took to be a lie, but allowed it to go at that. At the end of an hour we saw a faraway town sleeping in a

valley by a winding river, and beyond it on a hill a vast, gray fortress, with towers and turrets, the first I had ever seen outside a picture.

"Bridgeport?" said I pointing.

"Camelot" said he.

DR. HEBBEL E. HOFF, Professor and Chairman, Department of Physiology and Associate Dean for Faculty and Clinical Affairs, Baylor College of Medicine, Houston, Texas.

Delivered at the First Annual Meeting of the Connecticut Conference on Biomedical Engineering, May 7, 8, 1970, Hartford, Connecticut. The historical studies that form the material of this paper were supported in part by USPH Grants HE-05125, OVR RD 463 and LM-00453-05.

It seems to me that as we inaugurate the First Connecticut Conference on Biomedical Engineering, we can all see in the mists of the future the emerging outlines of what a closer association of physicians and engineers can come to mean, and indeed, as we leave Hartford tonight we will be traveling not only a road to Bridgeport, or to New Haven, Windsor Locks, or Albany, or Houston, or

any other such place for that matter, but to the Camelot of the future that is pressing so closely upon us.

Certainly, this Camelot will not be that of romantic legend, an attained perfection that has since been lost, nor of the probable historical fact of a last-ditch stand of the old Roman culture facing the overwhelming impact of the Anglo-Saxon barbarians. Rather, the new Camelot will be very much of your own construction, however shaped as it undoubtedly will be by the imperatives of social change. Perhaps the same thing will happen as it did in the past, with the preservation of much of the old though at different levels of priorities. So the Anglo-Saxon villains of the Arthurian legends were the heroes of Ivanhoe, and those Norman villains in turn became as good English as the rest. They were all no more than Scandinavian cousins, anyway, and only a few generations separated William the Conqueror from his Viking ancestor Rolf the Walker who had completed his conquest of Normandy only by 911.

II

The Early History of

Instrumental Precision in Medicine

In September of 1891 the Congress of American Physicians and Surgeons held its second Congress in Washington. The Congress had been founded by Silas Weir Mitchell of Philadelphia, who had the strong conviction that even physicians and surgeons were growing apart because of the advances of specialization in their fields, and needed some new forum to counteract this centrifugal force and to bring them back into effective and mutually beneficial interaction. This is indeed the first reason I chose Mitchell's Presidential Address as my topic tonight, for our purpose in this First Connecticut Conference is to achieve something of the same kind, and of equal importance for the future, an effective working association between Medicine and Engineering. The interesting, and yet unexplained fact that the address was published by Tuttle, Morehouse, and Taylor, Printers in New Haven, adds a second reason for choosing it for discussion tonight.

The essential reason, however, for selecting this as my subject was the remarkable scope of the address, for although Mitchell recognized the Instrument as a vehicle for medical progress, he was more interested in the basic philosophy of instrumentation, and the psychological mechanisms of discovery. Writing at a time when his own experience with instruments of precision included only

the microscope, the fever thermometer, and the pocket watch for counting the pulse, and in some degree no doubt because of the very simplicity and non obtrusiveness of his instruments, he saw past them to basic principles that, it seemed to me, were sound, and might still serve to guide us as we look at medical problems from an engineering point of view, or, perhaps equally important, find engineering problems in medicine. After all, ideas go both ways in all good associations, and those of us who are physicians can be proud of members of our profession like Galvani who gave us the beginnings of current electricity, of Poiseuille, who formulated the fundamental law of fluid flow in small tubes, and of a medical student like Galileo who first caught on to the laws of the pendulum at the age of eighteen by counting the cadence of his own pulse as he watched the swinging bronze lamp in the Duomo of Pisa. Forty years later he could still describe the accuracy of his proposed pendulum clock in the same terms, declaring enthusiastically, "my clock will not vary so much as the beat of a pulse." Nor can we forget Helmholtz who used his medical education to enter a rich and productive career where biology and medicine came in contact with physics and engineering.

Before he went on to the historical aspects of his subject, Mitchell laid down some of the principles of progress in medicine that are as applicable today as they were at the time he wrote, if not more so, and have general bearing well beyond the field of medicine.

First he spoke against premature specialization. Recognizing that the "specialties in medicine first rose by the wholesome and gradual evolution of the individual specialist out of the general practitioner" he felt that "for the young the pursuit of but one line of practice is too apt to result in an overestimate of their complete fitness" and lead to "hasty papers, mere case reports, wild pursuits of novelties, and the production of numberless minor text-books."

Perhaps these are not the terms in which to discuss these assertions; indeed it would be difficult to find any period in the recorded history of medicine when there were no specialists, or, really, to find any advance in medicine that did not result from specially directed effort, and there is little doubt but that Mitchell was perfectly aware of this. What I believe Mitchell was really attempting to get at was the stultification of development that can come from premature closing of the mind to other viewpoints, so often resulting from a too rigid

emphasis on practical application. A good case in point is Harvey's discovery of the circulation. It involved no new anatomical discovery, for Galen had seen almost as much of the structure of the cardiovascular system as Harvey, but it involved a wholly new synthesis of the way the parts fit into an operating whole. To Harvey the essential key was the presence of valves in the veins, and starting with this simple germinal thought Harvey moved on to the necessary corollary of unidirectional flow in all blood vessels, and then necessarily, to a circular flow of blood through the greater and the lesser circulations. Now the valves in the veins were, if not the direct discovery, certainly the favorite demonstration of Hieronymus Fabricius. A pupil of Fallopius, Fabricius taught Anatomy at Padua from as early as 1563, soon after Fallopius' death, to 1613 when he retired after fifty years of teaching, probably the most famous of all teachers in the most famous of all medical schools. He first saw the valves in the veins for himself in 1574 and began to demonstrate them in 1778, to successive generations of medical students from all over the world, numbering some five thousand in all. Why of all these thousands of students was it Harvey alone, who saw these valves demonstrated, perhaps many times in the five years he was at Padua between 1597 and 1602, who perceived their essential function to regulate the *direction* of blood flow, and to insure that in the veins, blood would flow only from the periphery to the right heart? It is more than probable that the other medical students looked at the demonstration medically, as incidental to the technique of venesection, and missed its "real" meaning. Harvey must have looked at it hydraulically, perhaps from the viewpoint of the valves in bellows used to raise water, an illustration he used later in his own anatomical lectures, and it must have been this simultaneous view of the valves from the biological and the hydraulic standpoints that permitted a new synthesis to be made. Broad scientific training and experience in an individual and full and free intercommunication among individuals of diverse backgrounds are two important factors that increase the likelihood that this sudden superposition of two viewpoints, or the fusion of two images to give a new perspective will take place. This is after all the essence of discovery, and this is why the University and not the technical school is most often the fountain of new knowledge, and this is why professionals in one field of knowledge should know what is happening in other fields, for it is in the mutual teaching and learning of inter-

professional associations such as we are inaugurating tonight that the germs of new knowledge are to be found.

This to me is the impact of Mitchell's warning about excessive specialization, and this I believe is the fundamental need for associations among specialists Mitchell had in mind when he spoke of the "need for continuous individual cultivation of our multiform science on a broad scale, and for personal consultation", referring to meetings such as the one at which he presided, and ours this week for that matter, as "general consultations", a "focal point for condensed opinions, authoritative statements" and "for criticism from varied standpoints."

Next Mitchell spoke for an increase in the tempo of application of scientific knowledge to every day problems. "The true rate of advance in medicine", he said, "is however not to be tested by the work of single men, but by the practical capacity of the mass. The truer test of national medical progress is what the country doctor is." This is as true today as it was then, although it could be stated somewhat differently; the truer test of our national medical care system is the quality of care that our people are receiving, and it still falls unhappily short of what our doctors are capable of giving. "The swift social changes of this age and country await too your study in the future. . . . all the vast hygienic social and moral problems of our restless, energetic, labour-craving race are, in some degree, those of the future students of disease in America." Clearly, Mitchell had an idea of the real scope of medical responsibility.

Part of the problem of delivery of medical care arises from the old bucket-brigade thinking about medical care. A scientific fact is discovered, perhaps in some laboratory far removed from the focal point of application in the doctor-patient relationship. It is forwarded from one hand or brain to another, through the many levels of "pure" sciences to the "applied" sciences, from the physical, to the biological to the medical sciences, translated with each permutation into a language more likely to be understood by the physician in contact with the patient. Finally, presented in recognizable language it is incorporated into his thinking, a new association is formed, and a new discovery in medicine is made.

This system is in the best of circumstances too slow, and too much dependent on chance and circumstance. In the future, and as we are now beginning to do, whole teams of workers must be moved up to and around the patient, so that his

problems can be seen in all its perspectives and the opportunities for revealing insights multiplied. Much will depend on the physician of the future to make these associations fruitful, and if because of his preoccupation with his patients' welfare, he perhaps continues to be the person who will most often have those lucid, and in an essential sense clairvoyant moments of double vision that bring new solutions, he will by no means be the only one, and all members of the team can have these moments of discovery.

Turning to medical instruments, Mitchell saw clearly that their use would impose new demands upon physicians. "You know, alas!" he said, "that we now use as many instruments as a mechanic, and that however much we may gain thereby, our machines are not labor saving. They force us, by the time their uses exact, to learn, to be rapid, and at the same time accurate. Thinking over the number of instruments of precision, a single case may require, it is clearly to be seen that no matter how expert we may be, the diagnostic study of an obscure case must exact an amount of time far beyond that which Sydenham may have found need to employ. A *postmortem* section used to take us an hour or two, and now, alas! it goes on for weeks in some shape until that last staining is complete, the last section studied, the last analysis made."

"The instrument trains the man" he continued, "it exacts accuracy and teaches care; it creates a wholesome appetite for precision, which, at last, becomes habitual. The microscope, the balance, the thermometer, the chronograph have given birth to new standards in observation, by which we live, scarce conscious of the change a generation has brought about. Certain interesting intellectual results have everywhere followed the generalization of precision by the use of instruments; like the world-wide lesson in punctuality taught by the railroad and made possible by the watch."

Finally, Mitchell added a note of caution. "Cheated into satisfaction by the trusted certainty attained as to a single symptom", a physician runs the risk of losing the "power or desire to reason on the grouped relation of the complex phenomena of disease. For unless men keep ahead of their instrumental aids, these, to coin a word, will merely dematerialize them."

Here Mitchell comes close to the very center of the problem of the instrument and its use in medicine where two closely interrelated factors are involved, the first dealing with its general philosophy and the second with the details of its design and

construction. As far as the first is concerned we can restrict our attention to those with which Mitchell was particularly concerned: the thermometer, the chronograph, the sphygmograph, which give a quantitative measure of a particular body function; in general, this is the category of the *diagnostic* instrument.

Such instruments are basically *sense organs*. That is to say they are designed to respond specifically to some particular bodily phenomenon and convert it into a signal appreciable by one of our natural senses; vision and audition are the modalities most frequently used. The data thus enters the brain of the investigator as the input of a natural sensory system and requires the same processing there that must be applied to all other sensations. There can here be no thought of the replacement of the natural senses by instrumentation; where these have yielded valid information they still retain the same usefulness they have always had. The instrument simply adds to the scope of the natural senses.

It accomplishes this *extension* of sensory range in the first instance by simple anatomic extension of the natural sense organ; the blind man's cane and the surgeon's probe place the fingertips at ground level or within an inaccessible wound. So ophthalmoscopes, gastrosopes, cystoscopes and proctoscopes and others of the same kind serve to place the physician's eyes within otherwise inaccessible cavities, and so also does the stethoscope bring his ears within the thoracic cavity to detect lung and heart sounds more effectively than by simple application of the ear to the thoracic wall.

Second, the instrument *amplifies* or *magnifies*. The first medical use of lenses was in spectacles, to correct presbyopia, and grew out of the recognition by the Greeks of the magnifying power of glass spheres filled with water. Robert Grosseteste drew attention in the first half of the 13th century to the practical value of lenses in making small things appear larger, and spectacles themselves appeared around 1286. Within a very few years the Venetian glass makers were making them as an article of commerce. The microscope and telescope came only some three hundred years later, and we need not dwell on the supreme value of microscopy in medicine. The microscope was the only instrument Mitchell brought back from his student days in Paris and he made it the cornerstone of his own research. Apart from microscopy we may perhaps list electrical amplification as the next most important application of this kind of instrument. This

long development, which started when Galvani used a frog nerve potential to detect the injury current in living tissue and is not yet complete after the development of the rheotome, the capillary electrometer, the string galvanometer of Einthoven, the cathode ray tube with electronic amplification first used in physiology by Erlanger and Gasser, and the electroencephalograph, brings up to the level of sensory perception a myriad of electrical signals and states, unperceived and unperceivable by the natural senses, by which the activity of the heart, the skeletal muscles, and especially the central nervous system can be followed, and what is especially important in man, often followed non-intrusively.

There is another feature of these electrical amplifying systems: properly speaking there is no normal sense organ specially devoted to electrical reception; at high enough levels ordinary pain receptors are stimulated. In a certain sense therefore these instruments add a *new sensory modality* to our battery of sense organs, and here is a virtually limitless field for the bioengineer to exploit in monitoring bodily changes in health and disease.

In a general way all the instruments based on the concept of a sensor make it possible to regulate the *mode* of sensor response. Inherent in all natural sense organ response is the property of *accommodation*; to some degree or another all sense organs respond more fully at the onset of a stimulus than after it has continued for a time. Some, like the organs of touch accommodate rapidly and completely to mechanical deformation, others, like the muscle proprioceptors accommodate more slowly and never completely; via his instrumentation the bioengineer can regulate his devices as desired to make them truly representative in quantity and time of the parameter studied, or, for example, to give only on and off signals.

Next, the bioengineer can *calibrate* his instrument in strictly quantitative terms or in one way or another derive other important data from it before presentation to the senses; he can strike averages, and determinate rates, frequencies and other aspects of the quantitative aspects of *measurement*.

Finally, he can obtain a graphic record of the phenomenon, usually along a time axis, although any two concurrent variables can serve, converting the fleeting into the frozen instant, making it possible to study phenomena without the press of real time and to establish communication with other

scientists across the barriers of language, space, and time.

Back in the early 1700's Jakob Leupold had foreseen much of the direction if not the detail of this development. He had personally designed an automatic self recording weather station, converting radial to linear motion and recording on a horizontal paper chart much like modern electrocardiograms and electroencephalograms. He had devised an efficient fire engine using an air chamber to convert intermittent output of the pump into a steady steam at the nozzle, and he had invented a non condensing, single acting, high pressure steam engine and the first good road roller. Above all he published between 1724 and 1727 a compendium of the instrument maker's art in nine volumes. A vast work of some 1,764 pages and 472 full-page copper engravings it is a veritable sourcebook of information on the state of the instrument maker's art in the seventeenth century. Written in sturdy German but with much embellishment of Latin in title-pages, etc. by this very fact it indicates one of its purposes, to bring together the latinized scholar and scientist and the practising engineer, or as he was then known the mechanic. Leupold was at some pains to identify at one end of the spectrum the *machinarius* who was able to invent instruments, and the *mechanicus* who could build and repair them, but he insisted on their essential unity.

Leupold had a pretty clear idea of what such a person should be; he had himself bridged the gap between maker and repairer and inventor, and he had kept a school to teach young artisans the "basic sciences" of their art. At his death he was planning the establishment of a school of mines and mechanical arts, and we may credit him with some understanding of the requirements for the new profession. This is how he expressed it:

"A mechanic ought to be a person who not only understands well and thoroughly all handicrafts, such as wood, steel, iron, brass, silver, gold, glass, and all such materials to be treated according to the arts, and who knows how to judge on physical principles, how far each according to its nature and property is adequate or suitable to withstand and endure this or that, so that everything receives its necessary proportion, strength, and convenience, and neither too much nor too little is done in the matter; but he must also be able to arrange according to mechanical sciences or rules for any required proportion, or effect according to present or proposed force or load;

for which purpose he must also have learned from geometry and arithmetic all that is necessary for calculation of the parts of the machine. And when he desires thoroughly to understand his profession, he must have a complete grasp of all the arts and professions for which he will have to make and invent machines; for otherwise he knows not what he is doing, and has also no power to improve anything, or invent anything new, such as is chiefly demanded of a mechanic. But above all he has to be a born mechanic, so that he shall not only be skilled in invention by natural instinct, but shall also grasp with little trouble all arts and sciences, in such a way that it may be said of him: what his eyes see, that also are his hands able to do; and that love of his art lets him avoid no trouble, labour, or cost, because throughout his whole life he has daily to learn something new and to experiment."

Our Yankee from Hartford has given his own definition in much the same vein but breathing a new vitality from a country in the full current of being reshaped by the mechanical age, and especially by the steam engine in steamboat, railroad engine, and in the factory. This is how he expressed it:

"I am an American. I was born and reared in Hartford, in the state of Connecticut—anyway just over the river, in the country. So I am a Yankee of the Yankees—and practical; yes, and nearly barren of sentiment, I suppose—or poetry, in other words. My father was a blacksmith, my uncle was a horse-doctor, and I was both, along at first. Then I went over to the great arms factory and learned my real trade; learned all there was to it; learned to make everything: guns, revolvers, cannon, boilers,

engines, all sorts of labor-saving machinery. Why, I could make anything a body wanted—Anything in the world, it didn't make any difference what; and if there wasn't any quick new-fangled way to make a thing, I could invent one—and do it as easy as rolling off a log."

Engineer, farrier, horse-doctor. Dr. Geddes and I once wrote about who might have been the first biomedical engineer. Could it have been the Connecticut yankee?

The great James Watt moved within this spectrum from his boyhood in his father's ship chandler's shop where navigational instruments were sold and repaired and through his apprenticeship in London with the celebrated maker of telescopes Short. He had been "Mathematical-Instrument-Maker to the University" back in Glasgow for some six years when John Anderson, Professor of Natural Philosophy, asked him to overhaul the University's model of a Newcomen steam engine for a class demonstration. Setting about repairing it (if indeed it had ever operated) "as a mere mechanician" as Watt reported, he found the 9 inch boiler could not supply the cylinder (2 inch chamber and 9 inch stroke) with enough steam for more than a few stokes—much like Mark Twain's steamboat with such a big whistle that the paddle wheels had to stop when the captain blew the whistle. It took Watt two years to solve the problem of the disproportion between boiler and cylinder—the steam "leak" was by no means as apparent as the whistle of Mark Twain's steamboat. In the process, however, he made the transition from *mechanicus* to *machinarius*; he invented the separate condenser and the age of steam power could begin.

(*This is the first of a series of two articles.*) End of Part I.

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X-Ray of the Month

Section of Chest Diseases

Yale-New Haven Medical Center

Arnold B. Rilance, M.D., Director, Winchester Chest Clinics

R.S., #79-45-90, a 19 year old male with known congenital heart disease, was admitted to the Yale-New Haven Hospital on 11/16/70 for cardiac catheterization.

Past History:

During the first three years of his life he had repeated episodes of cyanosis lasting for 30 to 40 seconds. In addition he was subject to repeated pulmonary infections. As a result of cardiac catheterization in 1953, a diagnosis of idiopathic pulmonary hypertension was made. In 1964, following a few months of easy fatigueability and a few weeks of low grade fever, a new Grade III apical systolic

blowing murmur was heard. A final diagnosis of acute rheumatic fever was made. In 1965, a repeat catheterization was performed. Mean PA pressure, 50 mm. Hg. LPA pressure 70/35.

Present History:

In recent years he has felt well and has played sports without dyspnea or other cardiac symptoms. One month prior to admission he had two episodes of hemoptysis. Following hospital admission, routine laboratory studies were within normal limits. A lung scan with MAA-I¹³¹ revealed almost all the activity was confined to the left lung in a proportion of 10:1.

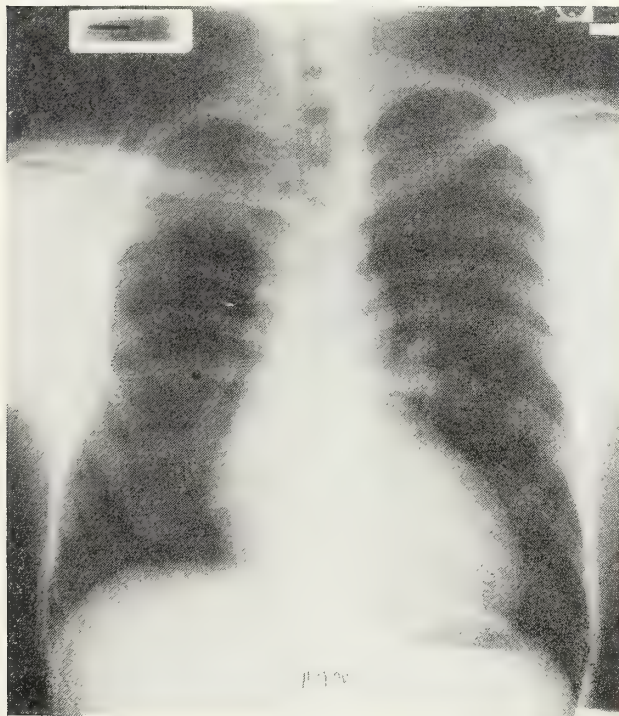


Figure 1

Post Right Thoracotomy. Note moderate cardiomegaly. The right hilum shadow, delineated by arrow, is grossly abnormal. Vessels radiating from the right hilum are numerous but small. There is no clearly outlined pulmonary artery on that side. The main pulmonary vascular shadows in the right lung represent branches of bronchial arteries that are grossly enlarged.



Figure 2

A normal bronchogram of right lung.

A repeat cardiac catheterization was performed on 11/18/70. This revealed:

1. Moderate pulmonary hypertension—Systolic —50 mg. Hg.
2. Absent right pulmonary artery
3. Absence of mitral regurgitation
4. Total arterial blood supply to right lung via branches from aorta and concomitant collaterals
5. Small A.S.D. with Left-Right shunt

A bronchogram was made which shows a normal bronchial configuration in the right lung.

Comment:

The finding of a hypoplastic or absent main pulmonary artery in the absence of overdistension of the lung and associated with a normal bronchial tree probably removes this patient from the category of "McLeod's Syndrome". In the latter condi-

tion, the pulmonary artery, though small, is usually present. The bronchial tree in the involved lung is frequently abnormal. The lung parenchyma is overdistended or emphysematous and demonstrates changes in the mechanics of ventilation.

This patient probably represents congenital absence of the right pulmonary artery in association with a small A.S.D. and left to right shunt. The cause for the pulmonary artery hypertension remains unclear.

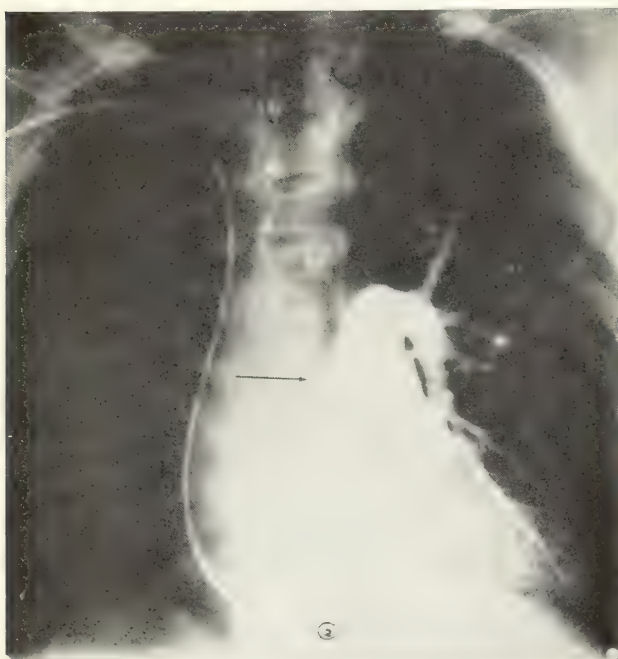


Figure 3

Right cardiac catheterization. Note total absence of right pulmonary artery as denoted by arrow.



Figure 4

Late phase of cardiac catheterization. Note numerous anastomatic vessels from apical area of chest wall communicating with vessels in right lung. Note markedly enlarged right internal mammary artery.

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The 48th annual convention of the Woman's Auxiliary to the American Medical Association took place at the Traymore Hotel in Atlantic City, New Jersey from June 20 to 24. Auxiliary president Mrs. R. C. L. Robertson, of Houston, Texas presided over the session.

On Sunday, June 20 a reception was given honoring Mrs. Robertson and the President-Elect, Mrs. G. Prentiss Lee of Portland, Oregon.

The keynote address at the formal opening of the convention on Monday was given by Mr. Walter H. Johnson, Jr. Chairman of the Board of Myers-Infoplan International, Inc. Mr. Johnson declared that our society has over-specialized itself and has wasted skills by not allowing people to give what is in their hearts. He feels that we women should be generalists in humanities; that we should be knowledgeable, concerned, useful and contributory—a full person—for our own self.

"Be yourself, not the doctor's wife," said Mr. Johnson. "You don't need your husband to be you. You can help the practice of medicine and the profession by applying your brains, energy and talents to communicating with people." He urged us to help by pointing out the good being done by medicine, the doctor's role in the community, and his concern for others.

"The task is to persuade our citizens that organized medicine has a plan which is a sensible answer to human need without loss of quality in medical service," Johnson stated.

"Rise Up Proud Eagles" was the theme of the annual luncheon in honor of A.M.A. officers, trustees and wives. Guest speaker was Walter C. Bornemeier, M.D. 1970-1971 A.M.A. President. In summing up the Auxiliary's contributions to medicine and to people, Dr. Bornemeier said, "You are sowing a variety of seeds . . . seeds of inspiration . . .

of leadership . . . of example. And it is America which grows . . . and grows better. We need a million like you."

At the luncheon, Mrs. R. C. L. Robertson presented a check for \$550,927 to John M. Chenault M.D., President A.M.A.E.R.F. It was the largest single contribution ever received by the foundation for educational purposes. It was also the first time that our gift exceeded a half-million dollars. Last year we contributed \$498,950.

President and Mrs. Nixon provided the high-light and excitement of the convention on Tuesday morning when the President spoke before the Association. Declaring drug abuse to be Public Enemy Number One, the President called on the A.M.A. to protect and preserve not only the nation's physical health but its moral health and its character. He urged support of the Administration's recently announced war against drugs and claimed such a project "would marshall the tremendous energy, the brains, leadership, talent and prestige of America's medical community in an all out battle against the drug menace and in educating the young people of this country about it."

The President said, "There is much to be done in this nation—in the fight against drugs and in other areas. And, once again, Americans are looking to the doctors of their land for leadership. But, we are looking to doctors for leadership beyond reform of health care systems, beyond drug abuse. Americans at this time need leadership from those in the medical profession and your wives." He encouraged physicians to give even more time in providing leadership in national problems.

Wednesday morning was concerned with business meetings and the installation of the officers and directors of the Auxiliary for the coming year. A post convention meeting for state presidents and

president-elects was held on that afternoon.

Mrs. G. Prentiss Lee, in her inaugural address, announced a national health education conference to be cosponsored by the A.M.A. and its Woman's Auxiliary for women's organizations interested in health.

"The conference will be a first for our organization and will be designed to stimulate women into action," Mrs. Lee added.

SIXTH JOINT CLINICAL MEETING ON OPHTHALMOLOGY

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Friday, October 29, 1971

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GENERAL

April 25-27, 1972—Tuesday-Thursday
180th Annual Meeting of the

Connecticut State Medical Society

Theme: Clinical Pharmacology

Hartford Hilton, Hartford

September 7, 1971-May 23, 1972

Lecture Series—Each Tuesday

Basic Sciences as Related to Clinical Medicine:

Infectious Diseases, Coronary Care Problems,

Diagnosis and Treatment of Tumors

Lawrence and Memorial Hospitals

New London, Connecticut

Contact: Edward Gipstein, M.D.

October 18-22—Monday-Friday

Rheumatic Diseases: Pathology, Immunology,
Diagnosis and Treatment

Countway Library Auditorium, Harvard Medical
School, Boston, Massachusetts.

Contact: American College of Physicians

4200 Pine Street

Philadelphia, Pennsylvania

October 21—Thursday

20th Annual Scientific Symposium

Connecticut Academy of General Practice,

Hartford Hilton, Hartford

Contact: Frank F. Northman, M.D.,

Bridgeport (333-1092)

October 25-29—Monday-Friday

"The Hospital Medical Staff Conference"

Cape Cod, Massachusetts

Contact: Local hospital administrator

DRUG ABUSE

Three Lectures: September 27, October 7 and
October 21

Meriden-Wallingford Medical Society

Speakers and Topics:

James O'Brien, M.D., Ph.D.—Emergency Aspects
of Drug Abuse

Herbert D. Kleber, M.D.—Methods of
Treatment
Former Drug Addicts Reflect on Treatment

OTOLARYNGOLOGY

October 4-9—Monday-Saturday

Postgraduate Course in Laryngology
and Bronchoesophagology

Department of Otolaryngology
Abraham Lincoln School of Medicine
University of Illinois, P.O. Box 6998
Chicago, Illinois 60680

October 8-9—Friday-Saturday

Postgraduate Course in Otolaryngology for the
Family Physician—AAFP—9 hours.

University of Miami School of Medicine
Miami, Florida, 33152

October 23-29—Saturday-Friday

Annual Otolaryngologic Assembly of 1971

University of Illinois Hospital Eye and
Ear Infirmary, Chicago

Contact: Otolaryngology, P.O. Box 6998,
Chicago, Illinois 60680

PEDIATRICS

November 10—Wednesday

Annual Pediatric Symposium

"The Newborn with Jaundice"

Lawrence M. Gartner, M.D.,

Albert Einstein College of Medicine,
New York City

St. Francis Hospital, Hartford, Connecticut

Contact: William E. Hart, M.D.,

Director of Pediatrics

PSYCHIATRY

Lecture Series: Connecticut Valley Hospital,
Middletown

September 28—Tuesday—10:30 a.m.

"The Computer and the Clinical Decision"

Bernard C. Glueck, Jr., M.D.

September 30—Thursday—2:00 p.m.

"Psychiatry and Violence"

John Donnelly, M.D.

SURGERY

February 4-5, 1972—Friday-Saturday

Symposium on Problems of the Female Breast as
Related to Neoplasms and Reconstruction

Memorial Sloan-Kettering Cancer Center,
New York City.



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OBITUARIES

Charles Seaver Smith, M.D. 1889-1971

Dr. Charles Seaver Smith, a surgeon and physician in the New Haven area for more than fifty years, died in Yale-New Haven Hospital on June 25, 1971 after a long illness. He was 82 years old.



He was born in Shelton, Connecticut, October 16, 1889, the son of Aaron Rowland Smith, and mother, Fannie Seaver. He prepared at Derby High School and was graduated from Yale University, class of 1912, and received his M.D. from Hahnemann Medical College in 1916. He then was appointed as resident physician where he served one year. While at medical school, he was president of Alpha Sigma fraternity and won several prizes for high scholarships. In March 1917, he passed examinations for admission to practice in Connecticut, leading the group.

He has since practiced in New Haven where he was attending physician at Grace Hospital and obstetrician of the dispensary staff of the same institution 1920-1949.

On June 5, 1917, Dr. Smith entered the U.S. Army, being commissioned First Lt. Medical Corps on June 20, 1917. He was promoted to Captain on February 17, 1919. He went overseas in September 1917 and was immediately attached to the Royal Army Medical Corps with station at Salisbury Plain, England. In December 1917, he went to France with the British and served there until April 1919 with stations at LaHavre and Yvetat. He returned to this country for discharge on April 22, 1919. Since 1930, he was attached to the 316th Cavalry as Regimental Surgeon.

On June 5, 1915 in New Haven, Conn., he married Vera Marion Blakeslee, daughter of Mr. and Mrs. Theodore Robert Blakeslee of New Haven. They had two sons, Charles Seaver, Jr., and Merwin Blakeslee, and a daughter Marion Gladys.

He also practiced surgery at Evans Private Hospital and was an instructor of surgery at the New Haven School of Physical Therapy. In 1929 he took postgraduate work in England, France, Germany and Austria. For the first three months of 1941 he was chief of surgical service at Fort Devons, Mass.

Dr. Smith was a member of numerous medical associations including the American Medical Association, the New Haven Medical Association, New Haven County Medical Association, the Connecticut State Medical Society. A fellow in the American College of Surgeons, associated fellow of International College of Surgeons. He has been past president of the American Institute of Homeopathy and also president of Pan-American Homeopathic Medical Congress. During 1925-1926 he was president of the Connecticut State Homeopathic Medical Society, also 1933-1934. He was a trustee of the American Institute of Homeopathy and served on the Board of Control, the following year. He belonged to the International Hahnemanian Association, the Eastern Homeopathic Medical Association, also Kiwanis Club and Yale Alumni Association of New Haven.

His warm personality, timely wit, and close association with all of his patients and fellow doctors will be greatly missed and especially by me, because of our wonderfully long and close relationship of 34 years. He gave unstintingly of his time and effort not only to patients but to all societies, organizations to which he was associated. If ever anyone "died with his boots on," he did!! He had driven 30 miles to see his patients on the day he was admitted to the hospital on April 13, 1971, never to return to his large, varied practice of 52 years.

His many acts of kindness to patients and to fellow doctors will always be remembered by those who had the privilege of knowing and working with him.

Dr. Smith leaves two sons, Seaver, Jr. and Merwin and several grandchildren.

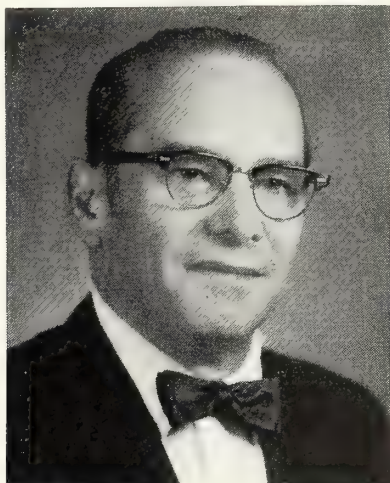
Charles H. Hodgkins, Jr. M.D.

William Walter Josephs, M.D.

1906-1971

Dr. William Walter Josephs of 115 Oliver Road, a practicing ophthalmologist and otolaryngologist in New Haven, died June 29, 1971.

He was born in Philadelphia, Pa. on April 24, 1906, and was the son of the late Simon and Adela Josephs.



He was a graduate of the Georgetown University Medical School. Dr. Josephs interned at St. Raphael's Hospital from 1930-1931. He served as resident at the Baltimore Eye and Ear Hospital in 1936. Since 1936 he has practiced ophthalmology and otolaryngology in New Haven. He has served on the staff of St. Raphael's Hospital for many years.

He served as a Major in the U.S. Army during World War II with the 12th Evacuation Hospital in Europe. He served also in the Army Reserve with the 340th General Hospital and retired from the Army in 1966 with the rank of Colonel.

He was a member of the American Medical Association, the New Haven City and County and the Connecticut State Medical Society.

Besides his wife, Ruth Schapiro Josephs, he leaves two sons, Dr. Barry Josephs a practicing dentist of North Branford and Dr. Lewis Josephs a professor of linguistics at the University of Hawaii at Honolulu, Hawaii.

Dr. Josephs had a keen interest in his patients and profession as well as local, national and international affairs.

Morris Glazer, M.D.

In Memoriam

Bonner, Robert, Sr., University of Maryland, 1912. Dr. Bonner was a general practitioner in the New Haven area since 1912. He was a past president of the Waterbury Medical Association, former chief of obstetrics at Waterbury Hospital, a member of the New Haven County Association, the Connecticut State Medical Society and the American Medical Association. He was also on the consulting obstetrics staff at St. Mary's Hospital. Dr. Bonner died July 26, 1971, at the age of 82.

Bruno, Francis Ernest, Tufts, 1940. Dr. Bruno was a practicing gastroenterologist in the Hartford area since 1948. He was chief of gastroenterology at St. Francis Hospital, radiologist at the State Prison in Somers, and consultant at the Rocky Hill Veterans Hospital. He was also on the courtesy staffs of Hartford Hospital, Mount Sinai Hospital and the University McCook Hospital. Dr. Bruno was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association, a fellow of the American College of Physicians, the American College of Gastroenterology and the American College of Radiology. He was also a major in the Army during World War II. Dr. Bruno died July 22, 1971, at the age of 57.

Chemical Methylation Of Inorganic Mercury With Methylcobalamin, A Vitamin B₁₂ Analog

(*Science* 172: 1248, June 18, 1971, Imura, N. et al.) We have not paid enough attention to inorganic mercury in the environment. Inorganic mercury by certain bacteria can be converted to organic mercury, which is a potent poison. The above authors now demonstrate that inorganic mercury can also be converted to organic mercury by methylcobalamin, a vitamin B₁₂ analog. This analog is found in microorganisms in mammalian sources such as calf's liver and human blood plasma and is believed to be widely distributed in nature.—L.H.N.

Connecticut Medicine

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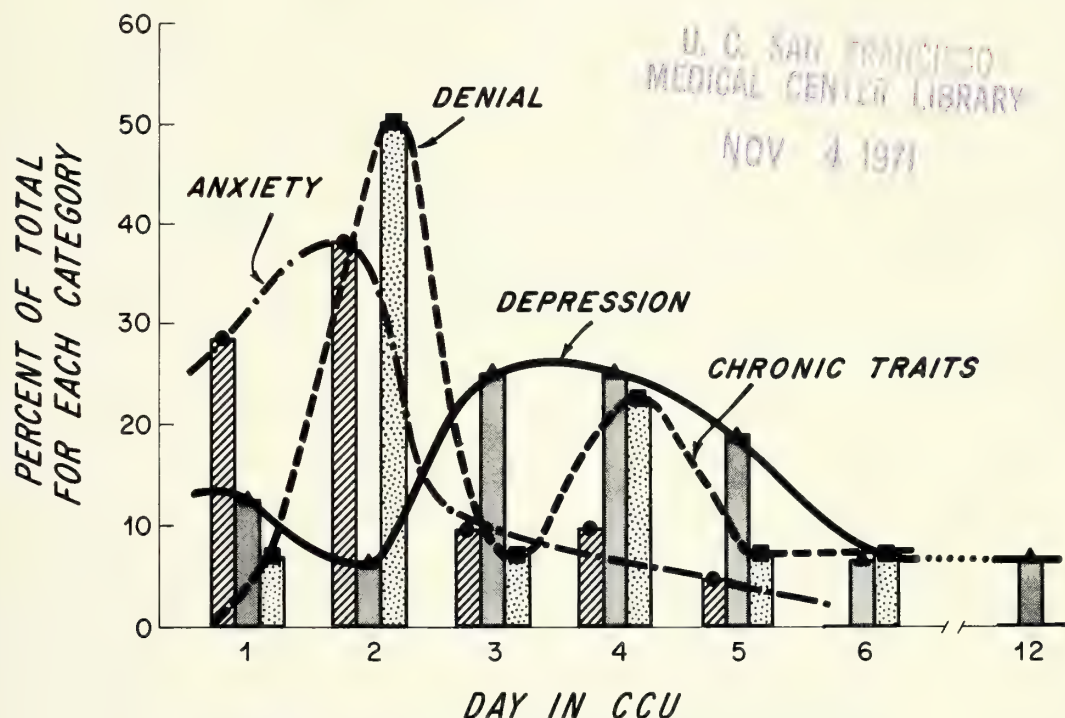
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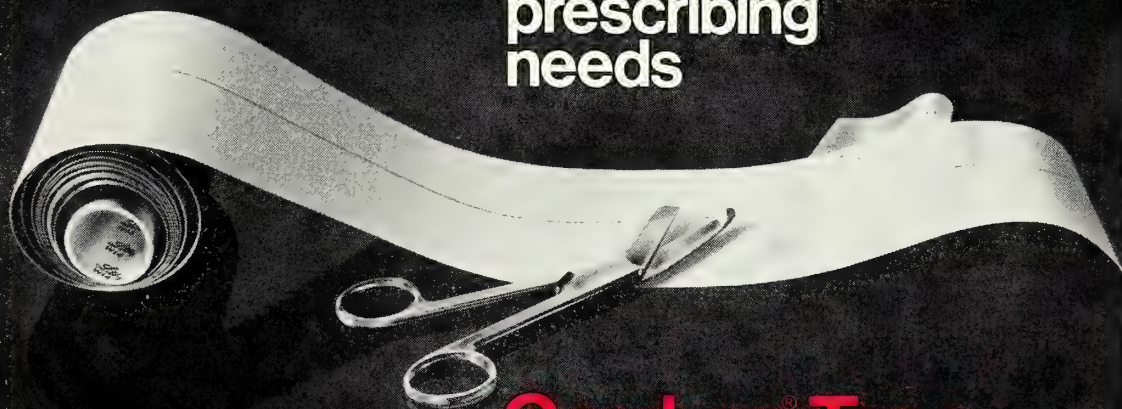
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Psychological Responses In A Coronary Care Unit

Cassem & Hackett, Ann. Int. Med., July, 1971, p. 13

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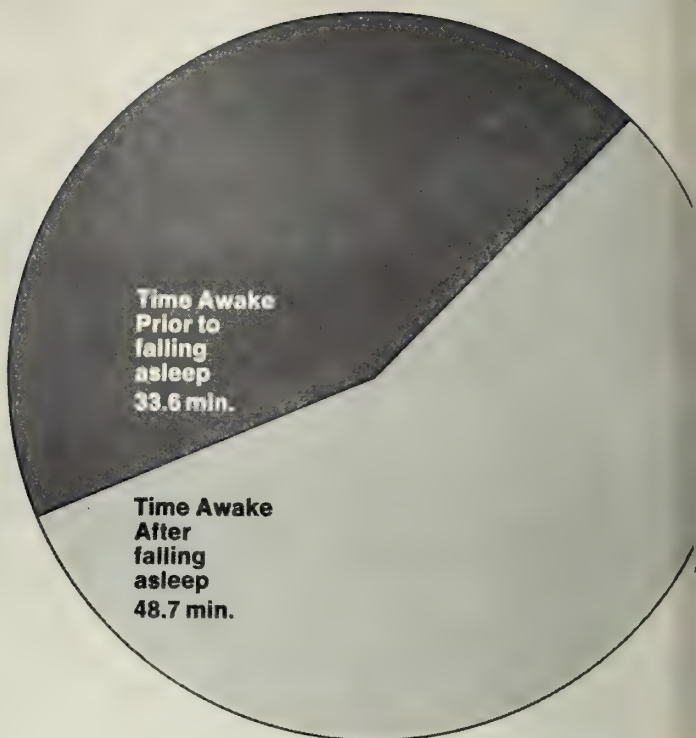
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References: 1. Frost, J. D., Jr.: "A System for Automatically Analyzing Sleep," Scientific Exhibit presented at Clinical Convention, A.M.A., Boston, Nov. 29-Dec. 2, 1970, and Aerospace M.A., Houston, April 26-29, 1971.

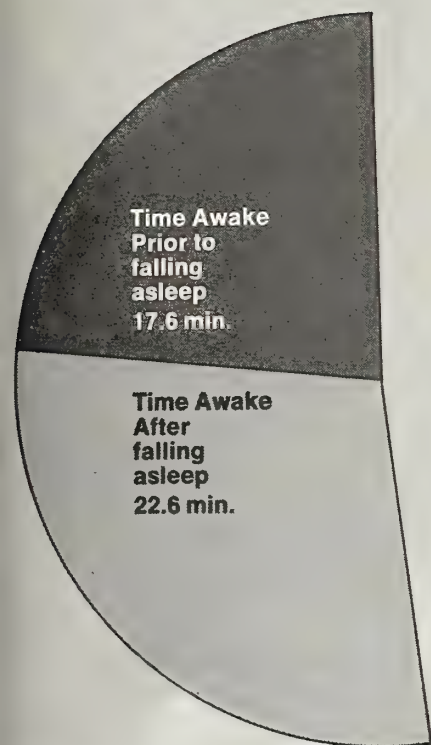
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Subscription rate for non-members \$15.00; Student-Members, interns and residents \$7.50; single copy \$1.50.

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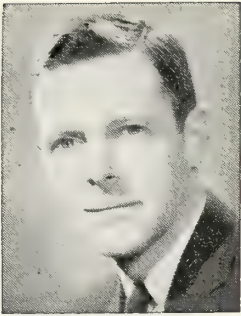
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PRESIDENT'S PAGE



A few years ago the major news item relating to medicine was the health manpower crisis, i.e., shortage of doctors. Figures published in the *American Medical News*, August 30, 1971, editorial (page 4) show that the number of doctors has been steadily increasing and has exceeded the estimated needs as set forth in a report from the Surgeon General's office in 1958. The number of nurses is also increasing yearly. It is evident that numbers of health care personnel are not the answer but rather their distribution. Since we have educated more doctors than were thought necessary, it would seem desirable to reexamine the doctor-patient ratio. The demand for PhD's in science and engineering was so great five to ten years ago that an oversupply developed and, in 1971, there were insufficient job opportunities for these highly trained graduates.

This year the major news item has been the alleged crisis in the health care system. Congress has had over a dozen bills before it directed toward solving some or all of the problems. Despite the fact that President Nixon was forced to divert the government's attention to caring for its own crisis over the balance of payments and value of the dollar, the debate on health care systems will continue next year on most of these same bills. The discussion generated so far in Congress, within the A.M.A., and especially among individual doctors should shed light on the problem and, hopefully, some understanding. It will be beneficial to have more time to study the supposed crisis and think about the merits of various proposed solutions.

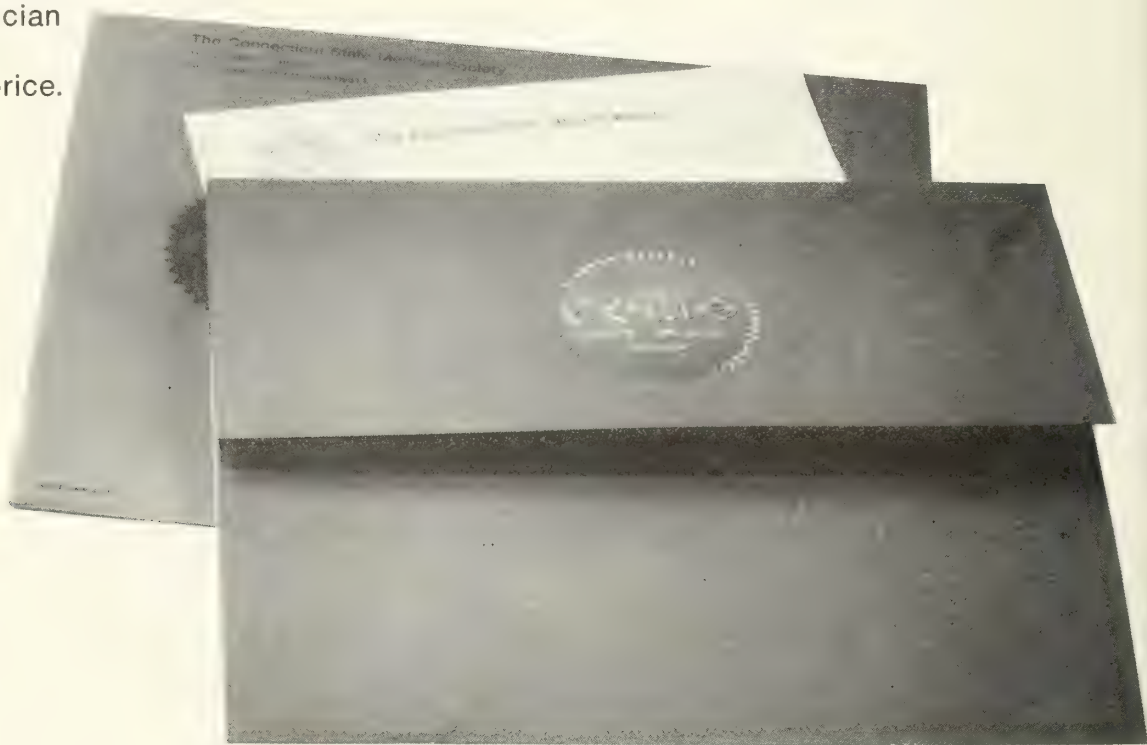
Several articles have recently appeared suggesting that all is not wrong with the present method of care. Dr. Katharine Elsom in an article, "Elements of the Medical Process", (*JAMA*, August 30, 1971, vol. 217, p. 1226) expresses clearly and in detail the indispensibility of the patient-doctor relationship in the fundamentals of medical care: diagnosis, treatment, and prevention. Harry Schwartz of the *New York Times* also has cautioned against a radical change. There are too many good features of the present system to scrap it entirely. There is plenty of experience with government sponsored and financed medical care to make us realize that it is not trouble free by any means. Our country is too big and demographically too complex to allow one system to be uniformly satisfactory. It would seem that the discussion of the past year on all aspects of the delivery of care has aroused some constructive ideas and if more time, perspective and thought is stimulated, some progress toward the solution of the many aspects of this complicated system could be forthcoming.

In the course of this progress the knotty question of distribution of doctors will keep coming up. Previously the law of supply and demand has been basic to the decision of where a doctor chooses to settle. It has been shown that the payment of usual and customary fees made possible a large increase in available doctors for Medicaid patients in Connecticut. Other factors, such as type of community (urban, suburban, or rural), and speciality influence the location chosen by doctors. Medical groups and partnerships seek additional new members to keep up with their growing needs. The ghetto areas are the most difficult to supply with medical care. The financial incentive is one way to overcome this problem; transportation of the patient to doctors' offices would be an additional aid; and making the areas safe to enter would be a further help in providing care for these deprived regions. Such solutions can be effected by reasonable efforts on the part of local government.

Frederick C. Weber, Jr., M.D.

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Non-Surgical Removal of An Embolized Polyethylene Catheter

Joseph P. Liss, M.D. and Arthur Crago, M.D.

Abstract

The successful removal of an embolized, radiopaque flexible polyethylene catheter from the left pulmonary artery via the right basilic vein is described. The procedure was atraumatic and was performed quickly with a snare-loop assembly system. We feel that this atraumatic approach rather than surgical intervention via a thoracotomy is the procedure of choice in attempting to remove catheter fragments from within the heart.

Indexing words: catheter emboli, foreign bodies, snare-loop assembly.

With the ever increasing invasion of the venous and arterial trees with catheters for central venous pressure monitoring, cardiac catheterization, intravenous infusions, ventriculoarterial shunts, and pacemakers, there has been an ever increasing incidence of catheter embolization. Several techniques¹⁻⁷ have been devised for the non-surgical removal of these foreign bodies from the cardiovascular system. In the case reported, a snare-loop assembly system was used to remove a polyethylene catheter which had embolized to the left pulmonary artery from the right antecubital fossa and is the first such case reported in the literature.

Case Report

R.H., a nineteen year old Caucasian male, was admitted to the hospital comatose, on March 1, 1970, following the ingestion of barbiturates. A polyethylene catheter was inserted into the right antecubital vein for the administration of in-

travenous fluids and sodium bicarbonate. A chest roentgenogram (Fig. 1) taken on the day of admission was within normal limits. As the patient improved, he became restless requiring restraints. The patient fully recovered and the catheter was removed on March 4, 1970. A repeat chest roentgenogram, taken following the removal of the catheter was reviewed and found to be within normal limits. The

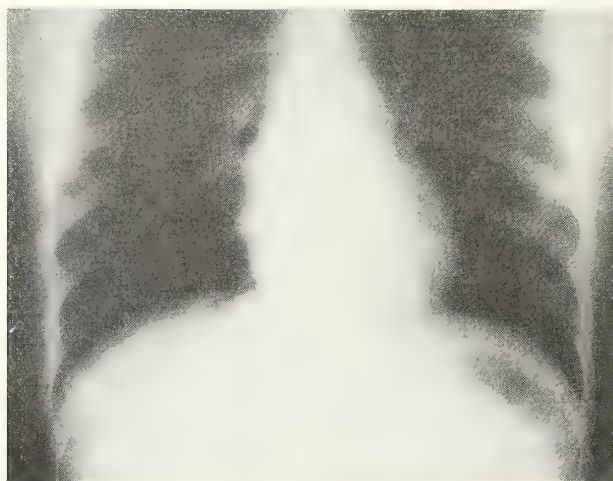


Figure 1

Chest X-Ray—3/1/70—ECG monitoring cables are noted on the anterior chest wall.

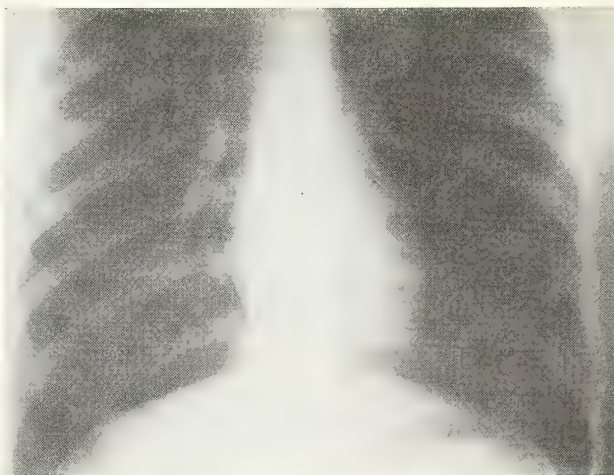


Figure 2

Chest X-Ray—4/13/70—Radiopaque catheter in the left pulmonary artery.

DR. JOSEPH P. LISS, Assistant staff cardiologist, St. Francis Hospital, Hartford, Conn.; Assistant director, Cardiac Laboratory, St. Francis Hospital, Hartford, Conn., Consultant in Cardio-Pulmonary Medicine, V.A. Home and Hospital, Rocky Hill, Conn.; Physician in charge, Cardiac Clinic, St. Francis Hospital, Hartford, Conn. and Assistant Professor, Department of Medical and Pediatric Specialties, University of Connecticut, Health Center School of Medicine.

DR. ARTHUR CRAGO, At the time the paper was being written Dr. Crago was a Fellow in cardiology, St. Francis Hospital, Hartford, Conn.

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patient was then transferred to another hospital for further psychiatric care. A chest roentgenogram taken on April 13, 1970, revealed a long, thin, radiopaque catheter in the left pulmonary artery (Fig. 2). The discrepancy between the chest X-ray of March 4th and April 13th is best explained by the lodgement of the catheter in the arm vein. Embolization to the cardiac chambers is not instantaneous and may occur within a period of days to weeks. This complication can be avoided in the future by measuring the length of the catheter and recording such prior to insertion and at the time of removal. Cardiovascular surgical consultation was obtained and the patient was transferred to our hospital on June 2, 1970. He was afebrile and asymptomatic on admission. The patient, however, expressed deep concern and apprehension over this foreign body and desired its removal. The physical examination as well as the electrocardiogram were within normal limits.

On June 3 1970, the patient was taken to the Cardiac Laboratory and a cut down was performed on the right basilic vein. A catheter exchange safety guide wire, 260 cm. in length with a diameter of 0.035" was doubled over into a 9F Lehman catheter with an outside diameter of 0.118", an inner diameter of 0.079", and 125 cm. in length to form a snare (Fig. 3). The snare was retracted into the catheter and the catheter advanced to the main pulmonary artery. With the tip of the Lehman catheter at the site of the embolized catheter fragment, the guide wire was extended to form a loop. The loop was then maneuvered to encircle the embolized catheter, which was secured after several attempts by reducing the size of the loop (Fig. 4). The catheter was then removed in a continuous motion under cine fluoroscopy. The patient tolerated the procedure well and without incident.

A chest roentgenogram following the procedure revealed that the embolus had been removed in toto. No clots were attached to the polyethylene catheter. Both aerobic and anaerobic cultures of the catheter and blood were negative for pathogens.

Discussion

The recent reviews of catheter embolization by Doering, et al,⁸ Wellman, et al⁹ and Blair et al¹⁰ attest to the increasing incidence of and the prob-

lems related to catheter embolization. It is generally agreed that foreign bodies within the cardiovascular tree should be located and removed at once, in an attempt to prevent thrombosis,¹¹ pulmonary embolism,¹² arrhythmias,¹⁰ endocarditis,^{9,13} perforation of the heart or great vessels producing hemorrhage, hemopericardium or tamponade^{8,14-15} and psychoneuroses.¹⁶ In a recent review of the American Literature by Bernhardt et al,¹⁷ of intravenous catheter embolization, they state that of twenty-eight patients receiving no treatment, 17 died of directly related cardio-pulmonary complications, while 34 patients in whom the catheters were removed were alive and asymptomatic. Blair et al,¹⁰ in their review report a 23% incidence of complications due to catheter embolization with a 12% mortality.

Catheter embolization solely to the pulmonary artery has been reported fourteen times previously by eleven authors.^{8,10,12,17-23} Twelve of these fourteen patients survived, eight catheters being removed successfully by a thoracotomy. Of the two deaths, one was directly related to the embolized catheter,¹² while one was not related.²⁰ Four patients^{20,21,23} survived without catheter removal.

No previous attempt to remove such a foreign body from the pulmonary artery with the catheter snare-loop assembly as described by Massumi and Ross¹ or with other non-surgical techniques has been reported in the literature to the best of our knowledge. Because of the potential morbidity and mortality related to the removal of a catheter by thoracotomy, especially in sick and elderly patients, we would differ with Blair et al,¹⁰ that "the safest method for removal in a patient who does not present any serious risk is by thoracotomy" and

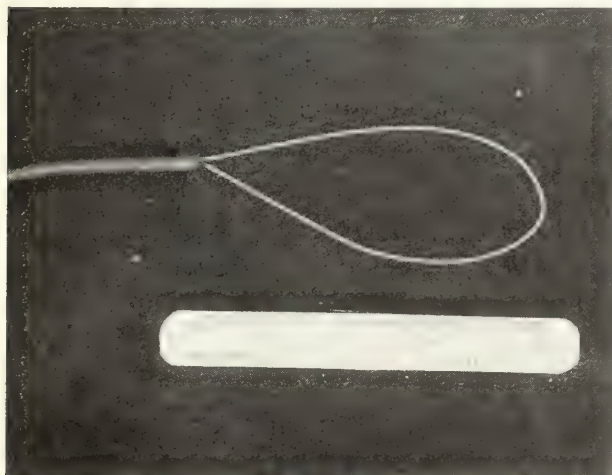


Figure 3
Catheter snare-loop assembly.

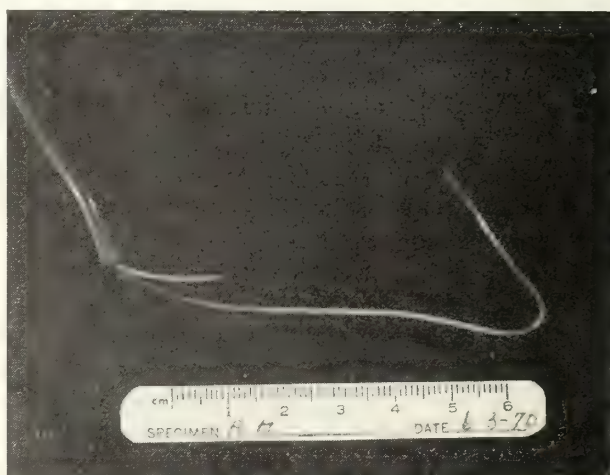


Figure 4
Snared polyethylene catheter.

agree with Weisse et al²⁴ that "a catheter wire snare device should be the procedure of choice in attempting to remove catheter fragments within the heart". This procedure may be performed in any cardiac laboratory by physicians familiar with catheterization techniques. Unsuccessful attempts with this device or with other non-surgical techniques may then necessitate thoracotomy as proposed by Blair et al.

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Sick man, pay the doctor what you owe him lest your malady occur again;
then no one will come to your side.

If he's rich let it be a proper occasion for profit; if a pauper let one fee suffice.—Isidorus of Seville.

Emergency Commitment in Connecticut or Detention of The Mentally Ill Person*

Michael A. Peszke, M.D.

There have traditionally been two issues that have inveigled the lawyer and the psychiatrist. These issues have been concerns about criminal responsibility (leading to a possible insanity defense), and those of involuntary (civil) commitment for "mental illness." The first is far more "glamorous and tantalizing since it usually involves a situation where a great deal of notoriety and publicity is associated with the defendant and where inevitably public opinion is polarized. Trials such as M'Naghten in England, Guiteau or Sirham in the United States illustrate the worst aspects of emotionalism and acrimonious features of the adversary proceedings—the battle of the experts. These issues of criminal responsibility have contributed a considerable amount of legal, philosophical and psychiatric literature in the last 100 years, some of it verging on the medieval argument as to how many angels can sit on the top of a pin. At this point, it is likely that the philosophical obsession of the lawyers and psychiatrists as to what level or intensity of psychiatric impairment is or is not compatible with free will and thus with individual responsibility has probably reached a point of diminishing return. The future is likely to see the ebbing of interest and of importance of this issue as executions cease and as society begins to emphasize rehabilitation and treatment rather than to assign blame and punishment.

A far more common and currently more important issue is undoubtedly the problem of civil (not criminal) commitments for involuntary, forced hospitalization and treatment to a psychiatric hospital.

Most of the controversy in this field has tended to come from lawyers who express their concern about this procedure in the following ways: (1) It tends to give far too much power to a single person; (2) the criteria for signing the certificate are

too loose and thus subject to too much individual interpretation; and (3) it deprives the committed individual not only of personal freedom, but also tends to leave a stigma on his future life and possible professional and vocational employment. Lawyers in our Anglo-Saxon tradition are taught to use and espouse the adversary or advocacy approach. They are nearly unanimous in their conviction that society and the individual can only be protected by a complete hearing, with the truth being arrived at by a reasonable man after all arguments and facts have been presented. This is the tradition to which most physicians do not subscribe. Rather, the medical tradition is to arrive at a consensual agreement through consultation, an approach which is more similar to the inquisitorial tradition of the civil-law countries of continental Europe. However, physicians, unlike attorneys, are also trained to make emergency decisions since many aspects of illness are life threatening and cannot be postponed till a second opinion is obtained. Physicians, therefore, accept the need for emergency decisions as long as these are made in good faith and with the good of the interested party at heart.

In recent years the problem of commitment has become a major issue. On one hand we have spokesmen, as Dr. Thomas Szasz,¹ who denounce all and any forms of involuntary hospitalization; while on the other hand a small number of people, usually the physicians, argue that it is a mere medical matter which should be only supervised and administered by physicians. On one hand arguments are advanced that psychiatrists ally themselves and act as agents of a repressive establishment, while on the other hand psychiatrists condemn lawyers for trying to make "a circus" out of what is essentially a question of medical judgment. Physicians argue that treatment and the care of the mentally ill is just as much a matter of medical judgment as is the decision to take out an appendix, to do a heart transplant, amputate a leg, or to transplant a kidney.

Unfortunately, it would seem that neither position does justice to the problems involved. The trend in medical treatment, backed by a series of

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* The emergency certificate is known in law as the Physician's Certificate for 30 days care and treatment in a mental hospital.

court decisions, is towards informed consent on the part of the patient. In involuntary, emergency hospitalization there is no such thing as informed consent. A clinical judgment is used and after a decision is made the patient is incarcerated. This incarceration is without doubt usually in the interest of the patient as perceived by the doctor; the problem is that this raises the imponderables of the basis of the judgment.

My own experience of seeing psychiatrists and attorneys operate can be characterized as being that physicians work from general assumptions and apply them to specific cases while attorneys use individual precedence (*stare decisis*) to argue from the specific to the general. To put it in a general way, a physician who has seen 70% of schizophrenics improve with involuntary treatment will tend to employ such tactics when dealing with a schizophrenic, while the attorney if he has read in his texts of one case of malicious involuntary hospitalization will tend to see abuse in every such action.

In addition to what is an obvious difference between the sense and responsibility engrained in the medical profession, i.e., a concern for human life, as opposed to that of the legal profession which is that of individual freedom.

Let us examine the issue of emergency commitment in the State of Connecticut as it exists, as it probably should be improved.² From a practical issue some of the reforms that are being advocated and with which the author is in sympathy would entail increasing expenditures at a time when there are needs for financial commitments and perhaps greater priorities demanded of society. As an example of this, I would just say it may be more important to spend money on improving facilities for the treatment of psychiatrically disabled children than to provide free legal services to patients who are being committed. The current law of Connecticut specifies that any licensed physician regardless of his specialty and clinical expertise has the statutory right, after examining a patient and finding him in need of "immediate care and treatment for mental illness," of signing a physician's certificate for 30 days' care and treatment in a mental hospital, usually referred to as the Emergency Commitment. Furthermore, the law then provides that the person in "need of treatment" has to be transported to a licensed psychiatric institution and may be kept there (for evaluation and treatment) for no more than a 30 day period of time. During this time the admitting physicians of the psychiatric

institution have the option to disagree with the initial signatory of the certificate and can release the patient, or on admission or thereafter they can persuade him to sign a voluntary certificate, as is being done with increasing frequency in Connecticut in recent years. This formal voluntary certificate necessitates a ten day notice prior to request for discharge. The most common option is to keep the patient for thirty days as provided by the statutes and within that time to institute probate commitment. The probate commitment is administered by a Probate Judge who appoints a panel of two experts who are neither affiliated with the psychiatric hospital or in any way related to the patient, and who then submit a written report to the probate Judge on the basis of which a judgment is made whether to discharge or to commit. I think it might be worth pointing out that the statutory language to which the expert panel has to testify is that "such person is mentally ill and is a fit subject for confinement in a hospital for mental illness." The commitment is for an indefinite period and the patient is not represented by a lawyer. (Though one progressive Probate Judge in Connecticut insists that when there is a possibility of a confrontation the patient be allocated such a lawyer.) There are no built-in procedures for review. It is strictly up to the physicians of the facility to decide when the patient is well enough to be discharged, or up to the family and the legal process (*habeas corpus*) to institute proceedings for release.

Such is currently the situation in the State of Connecticut. Other states have either much more archaic rules and laws in regard to the emergency treatment of the mentally ill or have in recent years taken steps to provide for greater protection, though we still have to decide whether the "improvements" such as the Massachusetts "Bill of Rights" for the mentally ill have indeed added anything to individual protection. I would like to explore in this paper some of the philosophical and psychiatric implications of the current situation since it is my impression from talking to many physicians and even a number of psychiatrists that their understanding of the obligations and even more of the commitment paper are rather scanty.

One of the interesting ways of looking at the concept of the emergency commitment is to see it in terms of the current philosophical and social struggle between freedom and responsibility. Does society owe its members unlimited freedom to pursue happiness or self-destruction? What kind of responsibility does the physician have when he is

faced with a mentally ill, self-destructive individual who refuses help but who obviously is not only a danger to himself but to others? One of the advocates and spokesmen for the civil libertarian group in the American legal profession and a gadfly of American psychiatry, Dr. Thomas Szasz, has advocated that physicians never sign emergency commitment papers. The position of Doctor Szasz is a rather interesting one and it certainly raises both medical as well as medical-legal issues. Are we justified in allowing psychotic self-destruction to flourish even if empirical evidence shows that with treatment it can be modified? Is it reasonable to take an analogy, very often used, that if a person is dying of cancer we cannot forcibly inflict surgery on him to prolong life? It would seem to me that such an argument is logically unsound, that in the case of the cancer patient his rational judgment is not in question and that in the situation of a psychotic, rational processes of thinking are indeed what is in doubt. The analogy surely is much more close to the victim of an accident who is unconscious and in need of emergency treatment but because of his condition cannot give informed consent. Does a doctor, or for that matter a layman, leave this man to die or is there an inference of duty and responsibility that treatment needs to be instituted? There is no question that concern should be raised as to the use of the emergency certificate, its scope and its provisions. In the past and in the present most of the impetus for questioning the emergency commitment procedures has come from lawyers. I think it is high time that physicians who are actually the people who administer this statutory power began to become more involved in thoughtful consideration of the implementing of changes. The following are the issues with some suggestions for change.

First of all the emergency commitment or the 30 day certificate for care and treatment in a mental hospital is given to every licensed physician regardless of whether the physician practices clinical medicine or whether he is an expert in the area of psychiatry. Some states have proposed that this power be enlarged to clinical psychologists. Some archaically see this as a peer (jury) decision in which an adversary proceeding determines the fate of the patient. I would advocate that it be limited only to licensed physicians and perhaps even better, limited to psychiatrists and public health physicians or their representatives. Such representative could conceivably be a registered nurse acting as a representative of a public health director, who

should be able to initiate an emergency hospitalization, for example, after a home visit to a family.

The possession of such a statutory power implies, regardless of what Doctor Szasz infers, the need to consider the use of it when clinical judgment so dictates. One of the concerns of physicians is professional liability and a malpractice suit. Interestingly enough the Research Department of the legal section of the American Medical Association, when requested to review recent cases, could only come up with one very marginal situation where a suit was brought against a physician *for not* writing an emergency certificate. It appears, that while physicians and psychiatrists have been sued for "faulty" commitment no physician has yet been sued for not signing an emergency certificate, or for liability arising from not doing so! Logic dictates that there can be two answers to such a situation. Either lawyers or families are loath to sue or not aware of the possibility of suing physicians and psychiatrists for such a neglect, or physicians err on the side of committing when in doubt and do not allow themselves the benefit of an error which might jeopardize the patient's health.

However, there is a problem for which legal jargon and medical judgment have little to offer. In what situations should a patient be considered in the words of physician's certificate in "immediate need of care or treatment in a hospital for mental illness?" The statutory language in Connecticut defines a mentally ill person as "every person afflicted by mental disease to such an extent that he requires care and treatment for his own welfare or the welfare of others or of a community, and specifically excludes the person whose sole disorder is drug dependence." (Until 1957 this statute—17.183 read, "idiot, lunatic, and non-compos and insane and distracted person.") Certainly this is circular argument and one has to develop more medically sound and scientific criteria than the statutory language. We will not argue the fact that mental illness is deleterious to others or to the community. Who can question the basic fact that many personalities have a malignant influence on the development and stability of a home or family? In fact, in all fairness probably all of us at times have traits which are harmful to the mental peace and stability of our loved ones, of our community, and exhibit personality traits which are potentially self destructive; for example, excessive smoking or driving beyond the speed limit. However, I doubt that anyone would consider such a situation reasonable grounds for emergency commitment. Therefore,

fore stringent criteria need to be used. I, for one, have always taught my students that to satisfy ethics and medical-legal criteria for an intervention which deprives a person of his freedom and of liberty the criteria in the following paragraphs should be present together.

The individual needs to be so mentally disturbed that he is psychotic and is physically harming himself or others in his community. It is my judgment here that harm to others has to be qualified as physical harm since psychological or social harm can be handled in a more responsible way through the intervention of the family courts or social workers. The mere diagnosis of psychoses should under no circumstance in itself be sufficient grounds for instituting commitment proceedings since there are any number of people whose idiosyncratic or eccentric lives are harmless to society, though possibly not fulfilling to themselves.

The current law does attempt to bring in certain provisions for the protection of the patient to be committed. I believe that these attempts are somewhat provocative, illusory, and are basically a danger to the physician and of no help to the person whom they are supposed to benefit. The patient's protection is written into a statement which states, "Prior to hospitalization, under the provisions of this section, any person shall have the right to be examined by a physician of his own choosing, and if such physician concludes from his examination that such a person is not mentally ill, such a person shall not be admitted to or detained in a hospital for mental illness under the provisions of this section." First of all, there is a loophole in the statutory language which may be by design or by neglect. It provides that, should a patient manage to get a physician to come in either as a consultant on his behalf at some very poorly defined point between the time of the signature on the certificate and the time of his admission to a psychiatric institution, this second doctor has to state that the patient *is not mentally ill*. Specifically, therefore, it is not a question of arriving at a clinical judgment that the patient may not be in need of involuntary detention but it is a global conclusion and judgment as to the lack of mental illness. Furthermore, as a meaningful protection of the individual this is practically useless since the patient is unaware of such a provision as are indeed most physicians and there is no legal expectation or precedent and certainly no medical moral imperative for the committing physician to state or explain this fact. Indeed it is rather hard to imagine

such a situation arising unless a patient is so wealthy that he is able to call in a second physician and able to convince that man to act against the clinical judgment of the first doctor. Unfortunately this unclear situation will more likely than not sooner or later raise a meaningful constitutional grounds for the challenge of an emergency certificate. Yet to take this to its logical conclusion and to acquaint the patient with his "constitutional" rights prior to commitment is to negate the concept of the emergency nature of the certificate and to raise the specter of an adversary proceeding in the exercise of medical judgment. I can only argue that this statutory language should in the future be either excluded or at the very least modified to read that if the family is willing and able to have another doctor undertake the treatment of the patient without an emergency commitment being pursued, then the responsibility for the management of the case rests with the family and the other physician.

I will argue that while to be deprived of freedom on the judgment of one individual however well meaning and however well trained professionally is a perfidious situation (even if necessary), to do so for a period of thirty days is open to question. Should not this emergency certificate be only for a brief period like three working days? That is enough time for the admitting physicians to establish the need for treatment, make certain diagnostic assumptions, collate data from the family and the environment, make a judgment as to the acute nature of the emotional illness and have medical evidence to submit to a psychiatric panel appointed by the Probate Judge. If the probate commitment is a court of equity and not an adversary proceeding then I am not particularly convinced that at this point the patient's interests or society's interests (financial burden) are necessarily served by having a legal defender appointed. On the other hand, it may be that having such an input from the legal profession would make the Probate Court a little more than a mere rubber stamp and would reassure society and the family that the interests of their member are being protected. It is conceivable that the protection of freedom is beyond cost accounting.

The panel of experts testifying in the Probate Court should address themselves in a stringent fashion as to the necessity for continued involuntary hospitalization and on a more scientific basis than the current statement that "such a person is mentally ill and is a fit subject for confinement in

a hospital for mental illness." Furthermore, there seems to be something terribly archaic in the all or nothing provision. I would argue that even at this early stage, three days following admission, the Probate Judge be in a position to evaluate a psychiatric panel's professional opinion and have more than the option of discharge or commitment as his working alternatives. It would seem useful to allow him the following options: a period of involuntary hospitalization with review in a month; outright discharge; and required continued outpatient psychiatric treatment for a period of time, or continued voluntary in-patient treatment with a 72 hour notice of discharge. I have heard it argued that such a situation would mean the Probate Judge playing physician. The judge essentially follows the advice of his two expert psychiatrists; is it unreasonable for the expert options to include outpatient treatment? The Probate Judge through the public health officials of the community could require the individual or family to undergo psychiatric counseling or therapy. While this proposal may offend and even shock some people, I see it as a far more benign step than a commitment which deprives one individual of freedom and alienates that patient from the family. Furthermore, in spite of concerns raised by psychiatrists that if motivation for treatment is not present then it cannot be successful, there is enough evidence to support the conclusion that when dealing with severe psychotic or borderline conditions treatment can be so prescribed and can be reasonably effective.

To conclude my remarks, may I say that involuntary treatment should never be for an indefinite period of time but should be under statutory review approximately every two or three months. This is one of the most positive aspects of the recent Massachusetts statutes³ and one to be highly commended and copied in Connecticut. It is at this point that an outside legal counsel would serve to enhance the protection of the individual when discouragement and apathy might be confused with withdrawal and illness.

The emergency certificate in the State of Connecticut appears in practice to be working reasonably well. Certainly, this is a tribute to the diligence, good faith, and mature judgment of physicians who are responsible for its administration. However, the fact that it works is no reason to accept complacently what appears to be a potentially bad situation and what is in effect bad law. In the State of Connecticut we had a good example of cooperation of psychiatrists and lawyers in promul-

gating and writing into law a privileged communications statute for psychiatrists which is undoubtedly the model for the country.⁴

Some of these steps might involve a different organization and recruitment of probate judges. We have seen a trend in the "recruitment" of coroners from the medical (pathologists) profession. It might be useful to reorganize the input of the Probate Court as being of two levels of significance, the first, initial, after seventy-two hours (three working days) could be a court of equity, while the review after two months could allow adversary proceedings and legal defense would be obligatory aid for the patient.

To advocate changes, to work towards an improvement in the delivery of care, to maintain the protection of the patient is not to forget the current reality as expressed by Doctor Kenny in a position statement on some current legislature.

"There will always be final limitations as to how much statute law can improve the care of persons who are ill. The patient does have to be protected by law. This is why the writ of habeas corpus exists, why the right to release privileged information belongs to the patient and not to the psychiatrist and why, in the final analysis, the physician must be prepared to be sued for any act of negligence with which he is charged. This is the way it is and this is the way it should be.

When all is said and done, the dignity, rights and proper treatment for the ill depend critically on the personal consideration, dignity, humanity and basic ethical consideration of those whom the community charges with their care.

The physician must never forget the legal rights of those whom he is treating. He has at the same time, side by side and within strict ethical bounds which can never be legislated, to remember their moral right to treatment."

Addendum

Since the submission of the paper, the Connecticut Legislature passed and the Governor signed into law—Public Act No. 760—which modifies part of the Connecticut General Statutes (17-183) as they pertain to emergency commitment. The 30 days has been shortened to 15 days (a step in the right direction) and the physician signing the statement has to conclude that: "I am of the opinion that the above-named person is in immediate need of care and treatment in a hospital for mental illness, BECAUSE HIS MENTAL CONDITION PRESENTS A DANGER TO HIMSELF OR OTHERS." The capitalized lines are a new addition.

These two minor changes by and large do not meet the main arguments for reform advocated in the paper. As changes, however, they are welcome in that they show possibilities for continuous improvement in the application of laws to this very vexing problem. Furthermore, since the submission of the paper an excellent article has come to my notice which I think deserves and needs to be mentioned. Professor Ralph Slovenko in a thoughtful and well argued essay presents excellent and well reasoned arguments against the current Szasz inspired American Association for the Abolition of Involuntary Mental Hospitalization (AAAIMH).⁶

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Immunization Against Drug Abuse

Leon Tec, M.D.

Most people agree by now that a drug abuse epidemic exists in the United States. Top priority, then, must be given to preventive measures. Unfortunately, we do not have a vaccine for drug abuse and we must look for other ways to provide at least partial immunity to potential victims.

A first step may be research, and so in February 1969 we conducted a study at one of the local high schools which involved 1704 students. They answered an anonymous questionnaire which consisted of 75 items relating to drug abuse, family relations, peer relations, attitude toward school, learning, sports, etc.

Many of the findings were of interest, but one drew our attention in relation to immunization. Teenagers who felt that their parents *did not care* about their children's involvement with drugs accounted for the highest number of those involved in drug abuse. This finding provided us with the hypothesis that improved relationships among parents and children may be a form of immunization against drug abuse.

These are no more than two associated factors, to be sure, but we feel they provided ground and tools for further investigation. Keeping in mind

our hypothesis, we became concerned with techniques that improve a parent-child relationship. Group discussions for parents were started where they could learn to improve the rapport between them and their children. Here are some of the unsophisticated but practical points directly connected with parent-child relationship which grew out of these group discussions. They may also be regarded as very real steps in "Preventive Medicine" against later drug abuse.

(1) *Proximity*—It was noticed that when a parent talks to a child from another room the response is usually poor. The results are better if the distance between them does not exceed three feet or so. Many children respond poorly to distant stimuli, but are impressed when addressed closely. In addition, proximity discourages the parent from raising his voice—not because one remembers that screaming interferes in communication, but because it is unnatural to raise one's voice when standing only two feet away from the child.

What is a possible reason for the child's better response when the parent stands close to him? It seems that many children frequently find themselves in a self-induced hypnotic trance—better known as "daydreaming". Sometimes this trance is induced by Television, rarely by a book. For a parent to establish communication, therefore, it is

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necessary first to take the child out of the trance by coming closer. If that does not suffice, put a hand on the child's shoulder. Only as a second step, speak to him.

(2) *Repetition versus Obedience*—It is not unusual for parents to repeat what they say to their children many times and then complain about the necessity of doing it. "I told you 100 times", or "How many times do I have to tell you?" Repetition of this sort is actually a confession of weakness and the child senses it. Children resent having weak parents, as it increases their anxiety. After all, somebody has to protect them and if the parent is weak, who will?

Parents may object to this statement by saying that they would not repeat themselves if demands resulted in obedience. Here is one singularly effective method of handling such a situation. (It will also probably come as a singularly shocking notion when first suggested to the parents.)

For example—PARENT: "Tommy would you please take your jacket off the floor and hang it up?"

Assuming that this statement was made not further than three feet away from Tommy and Tommy did not respond, the parent should pick up the coat and hang it up without comment.

Why do we advocate what appears to be corruption of children by making slaves out of their parents? Because the child identifies with what the parent does much more eagerly than with what the parent says, and after a few weeks the child will probably start doing what he has learned by example. It is certainly worth a try, for screaming repetitions are PROVEN ineffective and the wear and tear of conflict is destructive.

(3) *Children Must Win*—In playing games with children, adults very often forget that the process of winning is very helpful and promotes self-assurance. We introduce the concept of the *handicap*, well known in golf tournaments where a better player plays under a handicap. Children generally accept the fact that the parent has more experience and is better skilled in playing a game of checkers, for example. The parent should therefore remove a few of his pieces from the board to equalize the chances. If the parent wins, the next time one more piece will be removed. If he loses he will decrease his handicap. Using this system the parent can play a regular game without making "stupid" moves on purpose and can allow the child to identify with a proper way of playing. It also has the

advantage of not being underhanded, but being honest and direct.

Parents have to realize that success is essential for building of good self-appreciation. One does not accomplish it through defeat. It would be unfair for a grown man or woman to have equal chances when playing a game with their children who do not have the experience or maturity nor the skill.

(4) *Teenage Affection and Parents*—There are two major complaints which parents voice about teenagers—

(a) *Hugging and Kissing*—Teenagers do not show signs of affection and reject the parents who come to hug and kiss them. It is important for the parent to know that infants have to be hugged and kissed on parental initiative, but with teenagers quite the opposite is required. It is essential for a teenager to keep distance from a parent for many reasons, and the distance has to be determined not by the parent but by the teenager himself. When a 16 year old boy keeps distance from Mommy it is dictated by the incest tabu. Such discomfort of closeness does not exist at age four. A small child may want to marry his mother and not be afraid to cuddle her. If a teenager wants to hug or kiss his parents at times, the act here is determined by the young person himself and not experienced as a threat. It is threatening, however, if the parent makes the first move and it results frequently in rejection. That may make the parent feel unloved and thus conflict begins.

(b) *Territorial Imperative*—Another reason for the distance between parent and teenager is not only the rapid emergence of sexual drives which are at their highest, but also a need for territorial integrity which resents trespassing. Some people need more distance than others. It is very hard, therefore, to predict territorial needs of teenagers. But it is easy to respect them.

(c) *Listen*—Parent frequently mention the fact that they do talk to their teenager sons and daughters. However, they rarely listen. Our advice to parents is: "If you want to have a balanced conversation with your growing son or daughter, make sure that you are listening 80% of the time and talking only 20% of the time."

(d) *Scare Tactics*—Adults frequently talk about dangers to their teenagers without realizing that the adolescent is tempted by danger, intrigued by it and certainly not afraid of it. Therefore, scare techniques do not work in preventing drug abuse. They only stimulate interest.

Conclusion

We have presented highlights of the practical aspects that our discussions with parents brought out. The goal of all this was simple. Namely, what can be done to improve parent-child relations and how to go about it. We all realize that meeting for 12 sessions as we did does not necessarily guarantee success and we do not want to suggest at this moment that we have found a simple answer to a complex question. We are quite aware that there are other factors than poor parent-child relations which contribute to drug abuse. We can name two:

- (1) Availability of drugs,
- (2) The fact that drugs are fashionable.

Nevertheless we also keep our hypothesis in mind and therefore urge doctors, psychiatrists, psychologists, social workers, educators and parents not only to follow some of the points brought up here in improving relations between parents and their children, but also to promote and initiate discussion groups. A vaccine against drug abuse would still be preferable, but until one exists we do hope that these modest preventive measures will be useful. There is no doubt that a multiple approach is necessary. This is just one of the many.

Gastroenterology In Connecticut

I. Manpower In Private Practice

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Background

In 1964 a gastroenterology training program was established at Griffin Hospital (Derby) in coordination with the Division of Gastroenterology at Yale University School of Medicine. The success of this program, as reported by Spiro and DeLuca,¹ stimulated similar gastroenterology programs in other community hospitals. By 1968 six hospitals had established university-affiliated traineeships. This network of community-university hospital teaching programs in a subspecialty was then formally designated as the Yale Affiliated Gastroenterology Program (YAGP). A report on the progress of this program was recently published.²

In 1970 a grant from Connecticut Regional Medical Program (CRMP) provided impetus for further

expansion of this model for physician education and quality patient care. In order to plan future goals for YAGP, a survey of practicing gastroenterologists in Connecticut was regarded as an essential endeavor.

Purpose of Survey

Precise data on the number and location of clinical gastroenterologists throughout Connecticut had never been tabulated. Clifton had listed the number of gastroenterologists in each state when he published a national survey.³ The membership list of the Gastroenterology (GI) Section of the Connecticut State Medical Society (SCMS) provided the only updated compilation of gastroenterologists before this survey. Identification of all gastroenterologists in Connecticut was considered essential for two reasons. First, this information could be matched with population densities and hospital locales to determine the manpower distribution in this subspecialty. Secondly, lines of communication would be established so that future directions in gastroenterology could be jointly planned by the clinical subspecialists, YAGP, and CRMP.

Method of Survey

From a number of national and state directories a preliminary list of practicing gastroenterologists

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Supported by a grant from Connecticut Regional Medical Program (Grant CRMP 9097-41-50289).

in Connecticut was compiled. There reference sources included the AMA Medical Directory, Directory, Directory of Medical Specialists, GI Section of CSMS, American Gastroenterological Association (AGA), American College of Gastroenterology (ACG), and American Society for Gastrointestinal Endoscopy (ASGIE). To the list were added physicians who were new practitioners in the state or were known by personal communication to have a special interest in digestive diseases. For purposes of this survey a gastroenterologist was defined as a clinician who identifies *himself* as having a special interest in gastroenterology, is in active practice and has one or more community hospital staff appointments. No attempt was made to refine the list on the basis of formal subspecialty training or board certification. Those gastroenterologists who are full time medical school faculty members or Veterans Administration physicians were not included in the survey. These full-time personnel and their trainees will be the subject of a future report.

A questionnaire was prepared and mailed to Connecticut gastroenterologists in September, 1970. Broadly the questionnaire requested information on type of practice (solo, group, etc.), hospital appointments, office radiology, hospital diagnostic skills, access to more sophisticated gastrointestinal diagnostic studies, and state and national society affiliations.

In addition to this questionnaire, site visits were made to a number of community hospitals outside the larger population centers.

Results of Survey

The survey was completed and tabulated in November, 1970. A total of 58 practicing gastroenterologists were identified. Questionnaires were mailed to 55 of these (3 omissions were later included in the total survey). Table 1 lists salient information gathered from the questionnaire responses.

TABLE 1
RESULTS OF QUESTIONNAIRE SURVEY (NOVEMBER, 1970)

Forms Returned	50 of 55 (91%)	
GI Society Members (CSMS)	42 of 55 (76%)	
Internal Medicine Board Certified	38 of 55 (68%)	
Gastroenterology Board Certified	10 of 55 (18%)	
ACP Members	26 of 55 (48%)	
AGA Members	13 of 55 (24%)	
ACG Members	12 of 55 (22%)	
ASGIE Members	10 of 55 (18%)	
	YES	NO
Doing Own Office GI Radiology	27	23
Doing Hospital In-Patient:		
Esophagoscopy	40	10
Gastroscopy	43	7
Liver Biopsy	41	9
Gastroesophageal Endoscopic Photography	38	12
Small Bowel Biopsy	36	14
Rectal Biopsy	44	6
Access To:		
Gastric Cytology	46	4
Secretagogue Gastric Acid Studies	42	8
Fecal Fat Quantitative Studies	41	9
Digestive Visceral Radiosotope Studies	36	14
Esophageal Motility	31	19
Selective Angiography of Abdominal Viscera	40	10

TABLE 2
CORRELATION OF HOSPITAL BEDS, POPULATION, GASTROENTEROLOGISTS

Hospital Area	Hospital Beds	Estimated 1970 Population	Practicing Gastroenterologists	Gastroenterologist: Population Ratio
Sharon-Winsted-				
Torrington	362	80,000	1	1:80,000
Danbury-New Milford	336	130,000	2	1:65,000
Waterbury	812	230,000	2	1:115,000
Greenwich-Stamford	909	200,000	7	1:28,000
Norwalk	395	120,000	6	1:20,000
Bridgeport	900	300,000	9	1:33,000
Milford	119	50,000	1	1:50,000
Derby	187	80,000	2	1:40,000
New Haven	1,186	450,000	10	1:45,000
Southington-Meriden	384	90,000	1	1:90,000
Middletown	248	120,000	0	—
Bristol-New Britain	536	150,000	4	1:37,000
Hartford	1,683	700,000	9	1:77,000
Manchester-Rockville	363	90,000	2	1:45,000
Stafford Springs-Putnam-				
Willimantic	380	120,000	0	—
Norwich-New London	553	220,000	2	1:110,000
	9,353	3,130,000	58	

The key purpose of the survey was to correlate practice locale of gastroenterologists, population densities, and hospital beds. It was judged that the community hospitals would serve as the most convenient units for dividing the state into specific areas. Table 2 illustrates this division and the correlations.

Conclusions

The distribution of manpower in gastroenterology is not uniform throughout Connecticut. Large geographic areas have few or no representatives in this subspecialty. This finding is almost certainly not unique to gastroenterology. Uneven distribution of manpower in all branches of medical practice has become a compelling problem now facing the health care profession.

A question has arisen for all concerned with medical care: can the quality and quantity of manpower meet the growing needs of the population? We believe that this survey is an initial and vital step towards answering this question as it applies to one subspecialty in Connecticut.

Where do we go from here? YAGP, in concert with community hospitals and community physicians, is expanding its network of *communication* in Connecticut. This furnishes the foundation for continuing education and quality patient care. Another dimension, *counseling and placement services*, should now be added. YAGP may be able to provide assistance in the following areas: (1) advising community hospitals, upon their request, of means

to improve the delivery of modern gastroenterologic skills; (2) helping communities to find qualified gastroenterologists; (3) answering inquiries from trainees in gastroenterology about opportunities to practice in Connecticut; (4) investigating possible ways in which gastroenterologic services can become more accessible to the economically disadvantaged in the inner city.

The cooperation of gastroenterologists in the survey herein reported is a testimonial to their interest in the plans of YAGP. Implementation of these plans will require initial financial support from governmental agencies, such as CRMP. Private funding from organizations such as the newly incorporated Connecticut Digestive Disease Foundation and other sources of local support will be needed in the future.

Thus, there exists in Connecticut a model of cooperative effort for quality patient care: an organized training program, a funding governmental agency, and interested clinicians and hospitals. The next decade should witness the development and ultimate completion of this model.

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I believe the test of a truly great person is humility. I do not mean humility that doubts of one's own ability. But rather great men have a curious feeling that greatness is not in them but through them and they see something Divine in every other man and are endlessly, foolishly and incredibly merciful.—John Ruskin.

Connecticut Medicine

STATEMENT OF OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF OCT. 23, 1962 of Journal of The Connecticut State Medical Society, published monthly at New Haven, Connecticut, October 1, 1971.

State of Connecticut

County of New Haven ss.

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Editor, Connecticut Medicine

Editorials

Psychological Reconditioning Of The Patient With Acute Myocardial Infarction

There has been much attention given to the treatment of patients during the acute phase of myocardial infarction (MI). Much less attention has been paid to rehabilitation of the patient who had MI and has returned to normal social life and work. There are then two main issues. One is the physiological and medical limitations imposed by the MI itself. The other is the psychological problem of accommodating to a serious illness and holding it in proper perspective in subsequent life.

Wynn in Melbourne¹ recorded a high frequency of emotional distress and invalidism in 400 patients convalescing from MI. Of 107 persons who remained unemployable after convalescence nearly half were disabled by psychiatric problems which Wynn regarded as preventable. An examination of the emotional changes in 24 patients recovering from MI, Wishnie et al² found that 11 felt totally unprepared for the physical limitations they experienced and 9 of these after the first week home were so scared that they wanted to return to the hospital.

The most common complaint was weakness, but nearly all felt anxious and depressed during the first months at home. Irritability and frustration were about universal mainly in relation to inactivity. Only a few patients had had advice from their physician about the degree of physical exercise suited to their condition. Sleeplessness was common; half of the patients spontaneously stated that they thought about their hearts before going to sleep. Six had persistent insomnia and seven admitted that they feared the possibility of death during sleep.

During early convalescence, resolutions adopted during the acute illness concerning smoking, dieting, and alcohol commonly faded and at the end of the period at home the psychological resistance of most patients was so low that their return to work was a nightmare.

Sometimes it was so bad that retirement at a considerable financial loss was a result. Deterioration in family relationships was common as a result either of the patients uncertainly or of overprotection by the family particularly the wife provokes an angry reaction by the patient.

The psychological uncertainty is likely to begin when the patient is reaching the end of his period of bed rest. After the discomforts of the acute illness have faded, the symptoms referable to cardiac disease are few and of the same order for all patients with comparatively good heart function. But the weakness, dizziness and tendency to faint experienced while first sitting out of bed and during the first steps are distressing and sometimes frightening. Such symptoms are largely non-specific being equally common in those confined to bed for less serious conditions. The coronary patient cannot distinguish the non-specific consequences of prolonged bed rest and debility from those directly attributable to cardiac failure after a heart attack. It is not surprising that anxiety is often out of all proportion to the fault in heart action.

To prevent anxiety the physician should himself get the patient up first and explain the reactions to the patient to help him gain an emotional ascendancy. Otherwise the anxiety on getting up may well persist into convalescence outside the hospital. It will be misinterpreted by relatives as evidence of serious heart failure and may ultimately destroy any hope of return to effective occupation.

Those caring for patients with acute MI have the duty to enter fully into the realm of rehabilitation and to equip the patient with the best psychological approach for a return to his ordinary affairs. The process should begin during the acute illness when the patient begins to leave his bed. The doctor explains that the weakness on mobilization is a natural consequence of being in bed. Any suspicion by the patient that his gross incapacity entirely relates to his heart should be resolved long before it has time to become established. On the basis of an informed assessment of residual heart function, angina and an effort the patient should be set a clear program from the time he leaves the bed, to his return to suitable work.

In hemodynamic terms most patients return to good circulatory function at rest within 2 to 3 weeks. But the healing of the infarct and the formation of firm fibrous tissue is not achieved

until 6 to 12 weeks after the acute illness.³ Thus during the first 3 months after a heart attack the groundwork in psychological conditioning has to be achieved. Hard physical activity should not be undertaken within this time, but some mild exercise should be recommended to improve morale and give tangible evidence of return to normal health.

The difficulties experienced by nearly all the patients studied by Wishnie is in striking contrast to the overall picture of the Australian patients who were given individual physical and psychological conditioning at an early phase. Of nearly 300 conditioned patients who returned to work after an MI, 210 were assessed as having mild or moderate cardiac disability. Approximately 70 percent of these 210 continued working for at least 4 years. Individual and family morale was strikingly improved and Wynn maintained that strain or stress at work could not be held to have had an adverse effect on the natural history of the underlying heart disease. (See front cover).—L.H.N.

Society And Medicine: Alcoholism In Industry

There is an increasing recognition of the scope of alcoholism and its acceptance as an illness by society in general, most of industry and the government. For example, The National Transportation Safety Board¹ named the ten worst enemies of transportation, and alcohol led the list. In its annual report to Congress it stated that the death toll from alcohol could be as high as 25,000 lives. It may be involved in roughly half of the highway fatalities and as many as 10 percent of the fatal accidents both in pleasure boating and in general aviation, private business, agricultural and sports flying. "Available data" the report goes on, suggests that alcohol is the most deadly single crash-causing influence on our nation's highways.

Some companies for several years now have incorporated into their thinking and actions that alcohol is a sickness with beneficial results to both employees and employers. Estimates from many sources are generally in accord that a company will have 4-5 per cent of its employees involved in problem drinking irrespective of income level. Secondary results in the form of absenteeism decreased work performance and

loss of skills are estimated to cost U.S. industry in the vicinity of 4 billion annually.

Well formulated industry programs to attack this problem show a respectable rate of recovery or successful rehabilitation of 50-60 per cent of individuals identified. This is a higher rate than generally found in treatment progress outside of industry. The two factors believed to be pertinent to their success are early detection of problem drinking and the motivating force of job jeopardy to the individual.

A majority of industry programs contain the following components. A company policy clearly understood by all employees recognizes alcoholism as a health problem which can be treated. It is understood that the company will assist affected employees in getting proper treatment. Supervisory personnel are adequately trained in detecting every sign of deteriorating job performance and the proper steps to be taken in such circumstances. They however, are not required to make the diagnosis or handle the problem any differently from other health matters affecting the employees work.

The medical department is knowledgeable in regard to both alcoholism itself or to all available resources for treatment. This is an important factor because now the employer is given an opportunity to obtain treatment for his problem. This carries a clear understanding that the employee will lose his job if improvement is not apparent within a reasonable period of time. The key component to success is the production of a "crisis" that may help the employee understand that life without alcohol may after all be preferable to life with it. The "crisis" is produced by obtaining employee recognition that he has a drinking problem and that he will lose his job if alcohol continues to affect work performance. This is termed "constructive coercion."

Both as an industry problem and as a major public health problem creating increased mortality, family disruptions, and accidents involving others, it requires everyone, physicians, industry and the public to participate in any program or other measure which can contribute to a reduction of the frequency and severity of alcoholism. —L.H.N.

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Science Tools: Radarkymography

Radarkymography (RKY) is a technic that uses radar to scan the image of the heart on a television monitor and tracks the motion of multiple sites of the heart border. Obviously, it cannot scan the motion of the posterior ventricular wall nor the part of the ventricle that rests on the diaphragm, nor the interventricular septum. The use of this instrument is to detect normal and abnormal left ventricular wall motion (asynergy) which interferes with myocardial function. It now appears that these disorders may be of considerable importance in the development of heart failure. With this method it is possible to detect, localize and determine the progression, regression of wall motion disorders within the limitations noted above.

There have developed a number of technics for the detection of abnormal ventricular pulsation. The simplest and oldest is noninvasive, that is palpation and observation of paradoxical pulsation in the precordium. The newest are that described by Zaret, et al¹ and now Kazamias.² Zaret uses a scintillation camera after the injections of an albumin bound radio-emitting substance to visualize the interventricular dimensions in diastole and systole. This approach is still in its infancy and dependant on the further development of the associated technology. It is also extremely expensive. However, it offers the possibility of obtaining intraventricular shape during diastole and systole and such an approach remains an attractive feature. Kazamas, et al's RKY's method is a new non-invasive method for following external motion of the ventricular wall. It has the advantage of being non-invasive and it provides a linear response, is reproducible, requires little radiation exposure and does not rely on the subjective impression of the observer.

Three distinct patterns of asynergy were recorded. Complete reversal of pulsation (paradoxical pulsation) i.e. a tracing showing an upward deflection during systole and a downward deflection during diastole. A second pattern hypokinesis (localized diminution) of motion, on which the direction of wall movement is normal but in which the extent of motion is reduced. A third is termed akinesis-localized absence of movement in which the recordings showed no distinct waves in relation with the electrical events of the heart.

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There is, however, a poor correlation between repolarization abnormalities of the ECG and RKY. Persistent elevations of the ST segment has been reported in various studies of ventricular aneurysms. This change was present in less than one-third of the patients with chronic coronary artery disease in whom RKY clearly demonstrated complete reversal of pulsation. This means that absence of abnormally elevated ST segments does not exclude the presence of ventricular aneurysms. The method, however, encountered difficulties in the presence of extensive pulmonary fibrosis, pulmonary edema, plural effusion and distortions of the chest cage.

Dyspnea also interferes with good RKY since extraneous motions of the heart such as those produced by respirations introduce artifacts.

Of special interest is the demonstration by RKY of the variable course of the localized motion abnormalities and their relation to ultimate prognosis. More integrated information of this nature is essential and is to be anticipated. These will probably in the future be combined with other indirect measurements such as those derived from the carotid pulse and ejection times in an attempt to correlate the findings with estimation of pump function. Perhaps coupling the findings with ultra sound technics will help in evaluating wall thickness and possibly ventricular shape with the present method.

Given reproducible measurements of wall motion numerous questions remain to be studied further.³ Can subtle alterations of the nature seen with direct angiography be defined? Can temporary stress of the heart such as "hand grips" or transversous pacing be used to elicit latent areas of abnormal motion? Can those measurements be used for monitoring to assess incipient heart failure or help predict ultimate prognosis in the setting of acute myocardial in-

farcion (MI)? When coronary flow is restored to an area of reduced blood flow and localized dysfunction after aortocoronary by-pass surgery, is normal function restored to these areas. Can useful information be derived if force, in the nature of pressure, is related to the speed of wall motion?

New methods such as the introduction of the cardiac catheter 30 years ago have fostered new ideas and conceptual advances. We may expect that the technologies employed in Kazamias' studies will also lead to new ideas and further advances toward the full evaluation of myocardial function and its relationship to the performance of the heart as a pump. As electrocardiography did and other advances also, the clinical skill of the physician will be sharpened in his evaluation of the heart as a pump in his understanding of heart failure and much else.—L.H.N.

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Sleep Loss and Efficiency Of Performance

An appreciation of the benefits of sleep have long been known. Shakespeare called it:

The death of each day's life, sore labor's bath. Balm of hurt minds, great nature's second course. Chief nourisher in life's feast.—

In the last 15 years a general knowledge of the effects of sleep deprivation has grown up. Much has been acquired from studies on laboratory

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animals and a whole body of knowledge is growing on the effects of sleep deprivation in man. The dramatic appearance of psychoses in the recovery rooms of open heart surgery and the disappearance when the patient is returned to his ward is a striking example of relation of sleep deprivation to mental impairment.

Wilkinson² tested a group of young sailors and found that when sleep was reduced to 2 hours on a single night or to 5 on two successive nights, their ability to do a series of calculations or to report the accuracy of faint auditory signals was markedly impaired. With more prolonged sleep deprivation overt behavioral changes became obvious. After 100 hours of total sleep deprivation frank psychotic signs commonly appeared. Most previous work consonant with these observations, have revealed that any task requiring sustained attention and prolonged concentration is poorly done by persons deprived of adequate sleep.

The interne routinely works under conditions of repetitive sleep deprivation. His work, however, demands sustained attention, high quality of performance on numerous psychomotor tasks, and the preservation of psychic equilibrium. Since we know that sleep loss impairs emotional and intellectual functioning^{3,4} the questions arises to what extent does sleep loss affect the performance and psychologic state of interns in their daily work life. Friedman⁵ et al, undertook to compare the responses of internes when rested and when deprived of sleep. They used questionnaires to assess psychophysiologic state and mood and measured sustained attention tasks by a method involving detection of cardiac arrhythmias in the electrocardiogram. Their subjects were 13 men and 1 woman, 25-27 years of age.

The sleep deprived internes performed less well in recognizing cardiac arrhythmias on a tape, and felt significantly less "surgency, vigor, elation, egotism and social affection" and significantly more fatigue and sadness. On the other hand, aggression, anxiety, concentration and skepticism did not show significant differences between rested and fatigued internes. The rested internes experienced no psychophysiologic abnormalities in the physiologic, perceptual and cognitive categories. In short, the internes deprived of sleep scored poorly compared to the rested group.

In many hospitals, internes are prevented by the nature and extent of their work schedule

from following normal sleep-wake cycles. The existence during sleep deprivation of a wider range of symptoms than those systematically assessed in the study was suggested by the comments of the internes made during the administration of the questionnaires. The subjects were informed of the option to elaborate on answers and most internes responded with informal comments. Twelve reported that when deprived of sleep they experienced difficulty in thinking, 10 depression, 9 hyperirritability, 6 feelings of depersonalization and derealization, 6 inappropriate affect and 5 recent memory deficit. This last symptom was described by an interne as follows: "I am so tired I forgot what the name is on the chart I am writing in. As a result I write progress notes in the wrong charts and try to correct myself in the morning."

All internes were tested after 31-36 hours without sleep although some did stay up as many as 60 hours during a weekend on call. One might expect further deterioration in performance and increased psychopathology with longer periods of sleep loss. The minimum period of deprivation required to produce the changes observed in this investigation was not determined. We know the threshold for fatigue varies from person to person especially the soundness and duration of their sleep pattern normally. It is, however, likely that only limited amounts of sleep loss can be maintained by an interne before emotional and intellectual functioning deteriorates.

Many physicians frequently lose sleep and are unable to make it up the next day. Is their performance the next day to be considered comparable to that of the internes with drooping eye lids, slurred speech and various mood changes they exhibit in Grand Rounds?⁶ We need to know. The number and seriousness of mistakes made by internes occasionally on duty for 24 hours or more will never be known, but Friedman's study points up the need for Chief's of Service to arrange optimum schedules for internes so that they will remain alert in patient care. Schedules that deprive the interne of normal sleep not only may produce negative mood changes and transient psychopathology, but also impair efficiency of performance.—L.H.N.

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Bronchitis And Disability

Sooner or later most chronic diseases result in disability and bronchitis is the commonest single cause. It is therefore unfortunate that the long term view of treatment of this disease is not encouraging. Various antibiotics and antibiotic combination do have some effect on acute exacerbations of the disease. In a Medical Research Council trial of early treatment of chronic bronchitis, the rate of decline in function over a five year period was unaffected by chemoprophylaxis.¹ Johnston, et al.² in their study of winter prophylaxis found that the average decline in pulmonary function over the 5 year period was less in the treated group but the difference was not statistically significant. The contribution of cigarette smoking to this disease is more widely accepted, nevertheless the prognosis of patients who stopped smoking after the clinical manifestation of the disease does not seem to have been improved.

In 1965 Nelson and Crofton³ described the social effects of chronic bronchitis and this report has now been followed by a study of housing, employment and personal circumstances of 32 patients, mostly men, for the purpose of initiating remedial action where and when possible. For example, 69 patients who were thought to require rehousing were referred to the medical Officer of Health and 50 were rehoused. At the end of the study more patients were in employment despite a number of deaths and retirements. The report describes how much can be achieved by interest, cooperation and effort although such remedial action was not without difficulty. Fourteen patients refused rehousing, preferring to remain in accustomed surroundings. Fear of loneliness in a new housing development was often expressed.

The cost of the new accommodation was almost always greater, central heating was not always considered an advantage and elevators and noise contributed to the problem of resettlement in multi-story flats. Shift work, bonus systems

and lack of financial incentive produced problems in re-employment.

Little attention is paid in the report to the patient's family. There is an introductory paragraph which refers to the psychological consequences of disability resulting from chronic bronchitis, but this aspect is not explored further and no mention is made of the contribution of the emotional factors to the clinical picture. This is a serious omission as shown by Burns and Howell,⁴ for not only can the clinical picture be altered but problems in management, particularly the social aspects, can be accentuated. They found that patients with breathlessness more severe than could be accounted for by the severity of their pulmonary disease have a striking excess of psychiatric disturbances, mainly depressive illness. Furthermore, treatment of the mental disturbance alleviated the respiratory symptoms.

Interplay between progressive and disabling chronic disease and psychological disorders has only lately been appreciated, but it is clear that the patient cannot be isolated from his family nor can his psyche be relegated to the background.—L.H.N.

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Food Contamination: The Government Vs. The People

Residues of pesticides, antibiotics, hormones, bacteria and other hidden contaminants may have found their way into meat and meat products because monitoring of such contaminants is totally inadequate. Sufficiently sensitive methods to detect potentially harmful levels of such contaminants are not available according to Harrison Wellford.¹ Furthermore, he states that pesticides are often misused, frequently with the connivance of the chemical companies and the machinery for banning potentially harmful pesticides is cumbersome and heavily biased in favor of the manufacturers. His final complaint is that there is a confusing and damaging division of responsibility between different agencies in the Federal Government for setting and enforcing

quality control standards. However, the chief complaint of Nader's task force is that the combined lobby of the meat and chemical industry is so powerful that regulatory agencies have come firmly in their control.

Some of these problems are a cause of concern to scientists and increasingly to the public. One such problem is the use of certain antibiotics in animal feedstuffs. Eighty percent of meat, eggs and milk consumed in this country comes from animals that have been fed for all or part of their lives on medicated feeds. It appears that more antibiotics are sold to farmers than to hospitals. Concern about the use of antibiotics in agriculture centers arouse the possibility that drug resistant strains of bacteria may develop in animals and be transferred to humans.

The FDA approves use of drugs and sets a safe level of tolerance which the Department of Agriculture (DA) analysts then monitor. But sometimes drugs are approved by the FDA before the DA has developed techniques to test for their presence in meat. Such is the case with

the nitrofurantoin drugs which are used to control coccidiosis in poultry. Now the FDA has come to believe that some nitrofurans may be carcinogenic. It would seem that the FDA should not allow use of any drugs in animal feeds for which the DA has not developed sufficient sensitive detection techniques and in the long run monitoring of food for poisonous contaminants should be centralized in one health-oriented agency. The use of human antibiotics such as penicillin, tetracyclines as growth promoters and stress relievers for live stock poses an avoidable human hazard which the public should not tolerate particularly when there are substitutes available which have no use in human medicine.

The same story applies to the use of diethylstilbestrol (DES) which emphasizes even more clearly the importance of commercial profit vs. human health. DES is used with the feed of nearly three quarters of all the cattle slaughtered in this country and it is used to promote growth. DES is said to add 90 million a year to the profit of cattle growers and Wellford quotes the Na-

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tional Cattleman's Association as saying that beef prices would increase up to 10 percent if DES were banned. Yet it is the only chemical that is widely used as an animal drug for which there is strong evidence that it is carcinogenic both in test animals and in man.

A study conducted in 1956 by the National Cancer Institute found that a dose of 0.07 micrograms of DES caused uterine tumors in 50 per cent of mice treated. However, the techniques for sampling used by DA can only detect DES at levels of 0.9 micrograms per pound, 14 times the dose used by NCI study. Dr. S. Epstein of the Childrens Cancer Research Foundation claims "there is no question that it is carcinogenic in animals and is highly likely to have caused human cancers". They found an extremely rare cancer of the vagina in seven young women whose mothers had been treated with DES to prevent miscarriage.² It appears the DA must develop more sensitive testing techniques and if DES residues do appear regularly in meat, then the drug should be banned. Twenty-one nations have already barred imports of American beef for this reason.

As for pesticides, it is the chemical manufacturers that are accused in "Sowing the Wind" of a variety of malpractices ranging from irresponsible marketing to using delaying tactics in the procedure for banning potentially dangerous chemicals. It is claimed that the DA has been too slow in promoting alternatives to pesticides. The root of the problem seems to be in the weakness of federal regulations of pesticide hazard, for without sufficiently strong enforcement the chemical companies cannot be expected to limit their profits from the lucrative pesticide markets unless faced to do so by a powerful regulatory machinery.

The Environmental Protection agency with 200 employees affect the health and environment of our people on a scale comparable to that of the FDA, the National Air Pollution Control Administration and the Federal Water Quality Administration. The chief difficulty the agency is laboring under is that pesticide regulations must justify sacrificing concrete short-term loss in profits for a vague long-term public hazard which is in any case difficult to detect. But the main problem lies in the regulatory machinery itself which Wellford points out is heavily weighted in favor of the manufacturers.

The Pesticide Regulation division has been

criticized for accepting at face value testing data which are shallow and incomplete. It rarely conducts independent tests of its own and does not regularly solicit comments from outside scientists. Moreover, if the use of a chemical is cancelled by the Environmental Protection Agency the manufacturer has the right under the Insecticide, Fungicide and Rodenticide Act to petition for an inquiry by a scientific advisory committee and until such action is taken on that committee's report, sale of the chemical can continue.

The Nader's task force believes that the majority of abuses perpetrated on the housewife through sale of contaminated meat and on the environment through overuse of pesticides arise because the interests of the consumer are no match for the powerful lobby on Capitol Hill. Wellford suggests a remedy by setting up an independent consumer protection office to channel the interests of the consumer through the courts, Congress and federal and state agencies: "The substantive rights of consumer laws are hoaxes when procedures of delay, preferential access and secrecy keep the public from exercising them". So spoke the task force.—L.H.N.

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Medicine And Logic: I.

Medicine is the complete removal of distress of the sick, the alleviation of the more violent diseases and the refusal to undertake to cure cases in which disease has already won mastery.—Hippocrates

For centuries the diagnoses, the predictions, and the decisions of the physician have all taken place in a private world of his own. His private programmes are based on his medical training and subsequently develop from his clinical experience. He learns how much reliance can be placed on a certain symptom. He has learned to discard a sign he was once taught. He has found how unwise it is to advise operation in a given clinical situation. All this clinical experience made for his "programmes." As a decision maker he can become extremely shrewd. He is, of course, helped by scientific progress. He can photograph the inside of the stomach, X-ray various regions, scan organs, measure blood flow in the aorta by an esophageal probe. But the

doctor usually assumes that the bases for his work is not thereby affective. That only humans can arrive at a disease label or predict the outcome of disease.

The individual skill of a doctor is, however, necessarily limited by the sum of his experiences and can reach only a certain level during his lifetime and is then lost totally. We now have an opportunity of exploring an alternative medical system and developing its logical structure. This opportunity arises because of developments in relevant mathematics and because of the existence of the computer whose immense information store and calculating ability makes possible mathematical methods that were previously impracticable.

Computers can be used in medicine in various ways. They are used in hospitals for transmitting medical information, expressed in traditional terms, which have, however, yielded little to medical logic. But computers could also be used in a different way by giving reality to a logic of medicine and thus making explicit the activities of the doctor that were previously largely implicit. Only insofar as such logic is developed is any automation of clinical medicine possible.

When we seek to develop a logic of medicine we cannot adapt the entire process which the doctor uses since we do not know in detail what this is. The doctor in part uses logic, in part makes use of probability judgments, and recognizes patterns often with astonishing skill. The exact method is unknown, but we can imitate some of it and quantify aspects of his work. To do this, however, it is necessary to develop a logic that seems best fitted to this objective. Hippocrates definition of medicine alone is an informal definition. To make it formal, we have to proceed as follows: (1). We have to attach a certain measure of value to any given state of health and we think of one state of health as being more desirable than another.

In a patient with duodenal ulcer for example, there are certain outcomes which may follow medical treatment and certain outcomes which may follow operations. Similarly, in a patient with valvular disease. To each of these outcomes we imagine that a measure of value is attached, that is a number. For historical reasons this value is called a "utility". Then in deciding whether or not to advise surgery the doctor would like to advise the most favorable outcome, that is the outcome with the highest

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- *Electrocardiography: Model for Normal and Intraventricular Conduction Defects-Heart Block & Hemiblock: Indications for Pacing*—Peter C. Block, M.D., Cardiac Unit, Mass. General Hospital
- *Diagnosis, Treatment, Prevention of Specific Viral Diseases in Man*—Thomas C. Merigan, M.D., Chief Div. Infectious Diseases, Stanford Univ. Medical Center
- *Cancer Immunology Applied to Early Diagnosis of Tumor Growth, Detection CEA in Patient's Blood*—Phil Gold, M.D., Ph.D., F.R.C.P. (C). Montreal Gen. Hospital Div. Clinical Immunology & Allergy

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utility. But he has only a certain chance of attaining this and can act only to do this "on the average". The technical terms for "on the average" is "expected". Since he tries to make the utility resulting from his decision as great as possible on the average we may say that the objective of medicine is the "maximization of expected utility". This objective is known as the "principle of rationality". The doctor chooses in effect the best bet and the mathematics needed is the mathematics of decision making.

To begin with the patient, each symptom he describes, each sign elicited and the result of each laboratory test is any element of evidence towards the probability that a certain disease is present. For any element of evidence, we use the word "indicant" borrowed from the older medical writers but used with a slight change of meaning. A disease thus becomes a cluster of indicants each of which is present with a certain probability. By using statistical methods we can in principle evaluate what a given indicant is worth in the diagnosis of a specific disease. This approach could be better than the doctor's evaluation of the same indicant since it is based on a much wider experience.

Although disease labels may be applied, decisions as treatment cannot be used until estimates are made about the "utility" of the various states of health that may result from treatment. Some allowance must also be made for the "costs" incurred by a decision on treatment, or of some diagnostic procedure. "Cost" is used in a broad sense to include both financial cost and the anxiety, pain, etc., experienced by the patient as a side effect to the procedure.

The estimation of these "utilities" poses a difficult problem but we may be able to infer them from an analysis of the decisions that doctors are observed to make. Their use also implies consequences not readily accepted. For a decision making in practice means not only the assignment of a number, a utility to a particular state of health but also some financial equivalent for this utility. For example, a regional hospital board with limited resources and funds with a choice between two projects should choose, other things being equal, the one that carries the greater expected gain in human happiness. They make this choice from their experience and judgment but in so doing they are implicitly putting a monetary value on human life.

We then see that the logic of medicine requires

our recognition of "indicant", "utility" and "cost" in a system based on the principle of rationality.—L.H.N.

Reference

1. Card, W. I. and Good, I. J.: Logical Foundation of Medicine. *Brit. Med. J.*: 718, March 27, 1971.

More On People And Their Cycles

There is a need for social scientists to study people in their time dimensions more than they have done in the past. There is also a need for physicians to be aware of the cycles in which our patients find themselves. We all have circadian rhythms with all sorts of bodily functions undergoing cyclical changes through an approximately 24 hour period. Hence the awful feelings that assail us when we fly the Atlantic. But we are also governed by a host of social relations which we never give a thought but which might be useful objects of research.¹ For instance, we have three types of year; the calendar year dating from ancient Rome when an emperor added 2 months to the calendar, the financial year at the end of March, a relic of the ancient Roman customs of beginning the year at that time and the academic year which began when the student had got the harvest.

In fact, our social order could not exist without a number of behavioral sequences geared to cycles of varying direction. The sociologists have scarcely begun to analyze them. Yet, time is important to coordinate for social as well as biological or physical phenomena. Young and Ziman² suggest a terminology for use in such a study which includes descriptions of episodic behavior and also cyclic and recurrent behavior.

There appear to be three levels of cyclic behavior of increasing complexity in individuals, small groups and society as a whole. Cycles of personal behavior are easy to perceive and are partly governed by endogenous biological mechanisms geared to exogenous astronomical cycles, circadian rhythms, and partly by other factors. There may be weekly or monthly cycles, annual cycles or life cycles as well as idiosyncratic cycles related to work or family life. Every individual is at any moment locked into several different cycles with different periods and his behavior from moment to moment is a resultant of influence drawn from all the cycles.

Membership in a small group means that individual cycles need to be synchronized or har-

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monized often by subordinating a dependent cycle to a dominant one. For example, the children may have breakfast at a time to be determined by the needs of the father to go to work at a particular time. On the other hand, the cycles of the parents may be governed by the digestive cycle of their infant. In addition, the individual is caught up in a number of rhythms of social systems. The child has a rhythm geared to that of the school system, the parent's one is geared to his work system. These in turn are geared to social rhythms as a whole.—L.H.N.

References

1. People and Cycles. Can. Med. Ass. Jr., 104: 882, May 22, 1971.
2. Young and Ziman. Nature, January 8, 1971. pp. 91.

Problems In Treating The Cancer Patient

Recently there has been a flurry of excitement in Britain because one of the popular young athletes developed a malignant neoplasm and was taken to a famous Bavarian Clinic for treatment. She died there, but the news media had so popularized the clinic and its medical director that there was almost a public outcry for a British inquiry into the methods used. Incidentally, this was not a case of secret remedies. The director had already described his techniques to the medical press.

In response to a public mood a team of six specialists in cancer went out to Bavaria and examined the situation. Their report approved by all scientific bodies including the Medical Research Council was published as an official document by the Department of Health and Social Security.¹ Sad to report the team discusses the treatment at the clinic as ineffective

and states that no further investigation of it is called for.

When a patient is labeled as beyond cure by a physician there are three things his relatives can do. They can resign themselves to the inevitable, they can seek out a physician with a more aggressive attitude to the disease, usually cancer, or they can seek out an unorthodox healer using methods unfamiliar to orthodox medicine. History abounds with cases of this type, all too common and all too understandable types of activity and in most cases there is no difficulty in showing that the quack involved is either self-deluded or unscrupulous. However, within the framework of the medical profession there are physicians who either push therapeutic efforts further than their colleagues or add to the orthodox therapies others less generally accepted.

To assess their activity is more difficult. Example of this dilemma will readily come to all of us. At the Bavarian Clinic there was found a high standard of nursing and medical care and the usual chemotherapeutic agents are used, sometimes in higher dosage than usual. In addition, the director uses a number of techniques based on the belief that cancer is a systematic disease in a defective organism. These include removal of septic foci (teeth and tonsils) use of bacterial auto-vaccines and injection of irradiated blood.

All of these ideas are known to be ineffective, but they give the patient and family the impression that something is being done and that the patient is not being abandoned to his fate. Above all however, there is a remarkable doctor-patient relationship with the two becoming partners in an attempt to save the patient's life. Here then is the crux of the matter and the fact that so many patients go to a foreign clinic at considerable expense and inconvenience to find something they have failed to receive at home, is a reflection on the medical service given rather than a credit to the clinic.

In a cautious connotation on the report, the *British Medical Journal* takes the point of view that the Commission's report has been costly in terms of precious time of the cancer research workers who spent so much time in compiling it, "In a microcosm this whole unhappy episode exemplifies how not to influence research". However, as long as we use words as "hopeless" or "incurable" about our patients, we can predict

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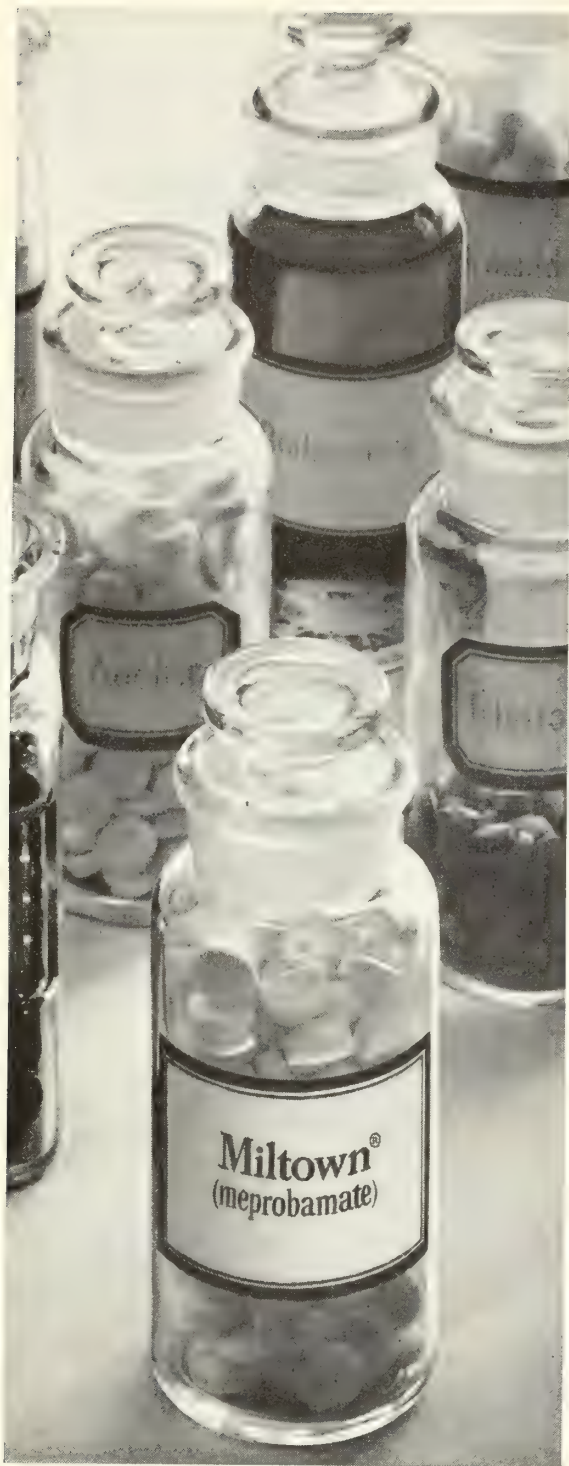
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quite confidently that there will be some who will seek elsewhere for the comfort they do not get at home. In a similar situation who knows but that we might do the same.—L.H.N.

Reference

1. Report on Cancer Treatment. Can. Med. Ass. Jr., 104: 880, May 22, 1971.

Narcotic Antagonists: New Drugs For A Pressing Problem

Two drugs are now available to block heroin addiction, cyclazocine and naloxone, both of which act by competitive blocking of binding sites of morphine in the central nervous system. A daily dose of about 4 mg given orally of cyclazocine which is the more widely used will block both the habituating effects and the euphoria, or "high" from heroin for 24 hours. Patients are built up to the blocking dose gradually over a period of several weeks and in the early stages often experience dizziness, headache and at times hallucinations. However, once established on the blocking dose patients who miss their daily dose report experiencing headache and sensations akin to "electric shocks".

The narcotic antagonists unlike methadone do not satisfy the addict's craving for drugs and despite side effects treatment with these drugs is for the addict very much like being drug free. In fact, many former addicts reportedly test the antagonist from time to time by injecting heroin because they "don't feel anything" with the antagonist.

Naloxone has far fewer side effects than cyclazocine and apparently does not require a period of gradual accommodation. Pharmacologically, it is in many ways an almost perfect antagonist. It is being used to treat heroin overdose and has been licensed for this purpose by the FDA. Recovery from the effect of overdose of heroin usually begin within a few minutes after Naloxone is injected. The drug, however, is not ideal because its antagonist effects do not last as long as cyclazocine. More than one dose a day is necessary and it is not very effective in oral form. It also has a bad taste.

Some research into new narcotic antagonists is already underway with promising early results. One compound closely related to naloxone and derived from thebaine a substance present in the poppy seed, is more effective orally and the required dose appears to be about one twentieth that of naloxone.

Most of the treatment programs using narcotic antagonists are restricted to patients who appear to be highly motivated to stop using drugs but a wide variety of problems are encountered such as a high dropout rate in the early stages and use of other drugs. One of the chief problems appears to be that patients are compelled to face their problem and to deal with the realities of their social situations, however impossible. This may well be beyond the capability of large numbers of addicts, many of whom use narcotics to avoid just these situations. It is still uncertain how many addicts can be induced in the long run to seek the more demanding type of treatment. Apparently, methadone is more appealing to many addicts. It relaxes them as compared with the antagonists from which they suffer tension, frustration and anxiety.

Three major roles have been proposed for narcotic antagonists in the treatment of heroin addiction. One is as a preventive in the treatment of the casual user of heroin before he has become addicted. Another is in the rehabilitation of addicted individuals who do not wish to be maintained on methadone, that is those who want to end methadone treatment. Finally are those entering treatment for whom methadone or a therapeutic community is not acceptable. The narcotic antagonists might be used prophylactically like a vaccine in high drug risk areas during a crisis. An example would be to vaccinate large numbers of teenagers at a high school that was experiencing an epidemic of heroin use.

A number of objections have been raised to the use of narcotic antagonists either in treatment or prevention. One is that multiple drug use appears to be an increasingly common practice even among heroin users and the effect might be to switch heroin users to amphetamines, cocaine, alcohol, or barbiturates. There appear in fact to be two basic points of view among those who work with the drug problem. Critics of both the antagonists and methadone believe that treating drug addiction by medicine rather than by educational preventive methods is characterized more by a concern for the welfare of society than the welfare of the patient. Psychologists and exaddicts involved with therapeutic communities have charged that the therapy provided in the antagonist programs amount only to hand holding and that the addicts basic problems are rarely tapped and dealt with.

Supporters of the narcotic antagonists believe

the urgency of the drug problem does not admit of waiting for ideal solutions and that the antagonists can provide help if not a cure for many who desperately need it. The addict is not down in the gutter, not narcotized past the point of coping with daily problems and not compelled to steal and other crimes. Others point out that while antagonists as presently administered will not stop those who want to use heroin, they can help prevent the impulse "fix" which may be of particular help to adolescents in resisting peer-group pressure to use drugs.

Skeptics who doubt the clinical effectiveness of narcotic antagonists point out that drug addiction is a behavioral response to deep-seated emotional problems and that administering yet another drug to "cure" these problems is a naive and simplistic approach. Granted, however, that antagonists are not the solution to the drug problem, but since the problem seems unlikely to go away, the antagonists, as is true of other methods, can play a potentially important role in treatment. As one addict put it, they can be "like having a friend in your pocket".—L.H.N.

Reference

1. A. L. Hammond: Narcotic Antagonists: New Methods to Treat Heroin Addiction. Science, 173: 503, August 6, 1971.

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Entero-Vioform and Organic Neurologic Disease

Iodochlorhydroxyquin (Entero-Vioform—Ciba) has long been used for prophylaxis of travelers' diarrhea. Recent reports, mainly from Japan, have called attention to an association between the use of the drug and the development of sensory and motor neuropathies of the lower extremities and visual disturbances, including optic atrophy. In some cases stopping the drug did not reverse the disorder.

In the chief Japanese study (T. Tsubaki et al., *Lancet*, 1:696, April 3, 1971), 35 per cent of 110 patients receiving therapy for 14 days or more developed the syndrome, and 2.6 per cent of 153 patients treated for 13 days or less were affected. On the basis of these findings the Japanese Ministry of Health and Welfare has stopped the production and sale of iodochlorhydroxyquin in Japan.

The doses used in the Japanese cases (0.6 to 1.6 Gm per day) were of the same order as those used in an American study in which neurologic adverse effects were observed in only 20 of 4000 patients (L. M. Gholz and W. L. Arons, *Amer. J. Trop. Med.*, 13:396, 1964). In a British study reversible peripheral neuropathy occurred in three of 35 patients who used iodochlorhydroxyquin (L. M. McEwen and P. Constantinopoulos, *Ann. Allerg.*, 28:256, 1970).

Optic atrophy and degenerative retinopathy have been associated with the use of large doses of a related drug, chloroquine (Aralen-Winthrop) in the prolonged treatment of rheumatoid arthritis (*Medical Letter*, Vol. 4, p. 103, 1962). Because of these serious adverse effects the manufacturer no longer offers the drug for the treatment of arthritis. It is still used for the suppression and treatment of plasmodia malaria infection, however.

Even in the absence of conclusive evidence of a causative association between iodochlorhydroxyquin and neurological and visual disorders, it would be prudent for physicians to refrain from prescribing the drug for prophylaxis of travelers' diarrhea, particularly since the evidence that it is effective is questionable (*Medical Letter*, Vol. 13, p. 15, February 19, 1971). The opiates and the more expensive alternative drug, diphenoxylate HCl (Lomotil), are available for the symptomatic treatment of travelers' diarrhea.

Reprinted from The Medical Letter on Drugs and Therapeutics, New York, N.Y., Vol 13, No. 12, June 11, 1971.



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References: 1. Batterman, R. C., and Grossman, A. J.: *Fed. Proc.* 14:316 1955. 2. Goodman, L. S., and Gilman, A., ed.: *The Pharmacological Basis of Therapeutics*, ed. 4, New York, The Macmillan Company, 1970. 3. Vickers F. N.: *Gastroint. Endosc.* 14:94, 1967. 4. Mielke, C. H., Jr., and Britten A. F. H.: *New Engl. J. Med.* 282:1270, 1970 (Corresp.). 5. Kestler, O. C., and Gyurik, J.: *Industr. Med. Surg.* 21:372, 1962. 6. Forster, S., et al.: *Amer. J. Orthop.* 2:285, 1960. 7. Data on file, McNeil Laboratories, Inc. 8. Friend, D. G. *Clin. Pharmacol. Ther.* 5:871, 1964.

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CALL

SEMI-ANNUAL MEETING OF THE HOUSE OF DELEGATES

The 1971 Semi-Annual Meeting of the House of Delegates will be held at Holiday Inn, Bridgeport, Connecticut commencing at 9:00 o'clock in the morning of Wednesday, November 17.

Frederick C. Weber, Jr., President

Kenneth F. Brandon, Speaker of the House

Louis C. Backhus, Secretary

INTRODUCTION OF RESOLUTIONS

Article V, Section 12, Par. 3 of the Bylaws of the Society Provides that:

All resolutions to be considered as regular business at any regular meeting of the House of Delegates must be in the hands of the Speaker not later than seventy-two hours before the opening of that meeting. All resolutions and recommendations published in the official agenda distributed to the members of the House prior to the meeting at which action is to be taken shall be considered as regular business. Resolutions presented later than seventy-two hours before the opening of a meeting will be referred for consideration as regular business by the House only when they are presented by the Council or accepted for consideration by majority vote of the delegates present. Any resolution which does not qualify in accordance with the aforesaid provisions for consideration as regular business may be accepted for action by a majority vote of the delegates present and, if so accepted, shall be referred at once by the Speaker to a reference committee. Any such reference committee shall consider resolutions referred to it and shall report, with recommendations to the House before adjournment of the meeting.

PROPOSED AMENDMENTS TO THE BYLAWS

The following proposed amendments to the Bylaws were presented to the House of Delegates on April 27, 1971 and were tabled for consideration and action at the next regular meeting of the House of Delegates.

In accordance with the Bylaws, these amendments will be published in Connecticut Medicine, "on one or more occasions prior to the next meeting . . . at which meeting the amendment shall be taken off the table and acted upon by the House of Delegates."

INTRODUCED BY THE COUNCIL

1. Committee On Allied Medical Services

Purpose: To make the Committee on Allied Medical Services a Standing Committee of the House of Delegates.

Amendment

Article XI—Divisional Boards and Committees

Section 3. Divisional Standing Committees. Paragraph (A) Education and Hospitals Division. Add: Committee on Allied Medical Services.

Section 5. Duties of Standing Committees. (Add new numbered paragraph). Par. (no.) Committee on Allied Medical Services. The Council annually

shall nominate to the House of Delegates a Committee on Allied Medical Services to consist of not less than eight members and shall nominate the chairman thereof. The functions of the Committee shall be to arrange and maintain liaison and conference with allied health care service groups, such as the Connecticut Nurses' Association, the Connecticut League for Nursing, the Connecticut Hospital Association and others, for the purpose of promoting continued dialogue and study among representatives of such groups concerning the professional, legal, and socio-economic aspects of their inter-relationships and the ways and means of achieving jointly their common objectives.



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INTRODUCED BY THE COUNCIL

2. Committee On Disaster Medical Care

Purpose: To change the name and duties of the Committee to Committee on Emergency Medical Services. It is the feeling of the Committee that this name would be more appropriate since the Committee, in the future, should deal not only with disaster medical care, but also with emergency medical care as it relates to accidents, transportation of the injured and emergency room care.

Amendment

Article XI—Divisional Boards and Committees

Section 3. Divisional Standing Committees. Par. (E) Socio-Environmental Medical Division. Delete: Committee on Disaster Medical Care. Add: Committee on Emergency Medical Services.

Section 5. Duties of Standing Committees. Par. 26. Committee on Disaster Medical Care (Delete entire paragraph). Add: Committee on Emergency Medical Services. The Council annually shall nominate to the House of Delegates a Committee on Emergency Medical Services to consist of not less than six members and appoint the chairman thereof. The purposes of the Committee shall be to study and keep informed on matters pertaining to the planning of programs to provide continuing medical care to the people of Connecticut under disaster conditions, as well as programs to assure the availability of adequate medical services under emergency situations of less than disaster proportions, and to cooperate with other agencies in the State engaged in similar activities.

INTRODUCED BY COMMITTEE ON POSTGRADUATE EDUCATION

3. Committee On Postgraduate Education

Purpose: To change the name of the Committee to the Committee on Continuing Medical Education in keeping with the terminology of the AMA and other state medical societies.

Amendment

Article XI—Divisional Boards and Committees

Section 3. Divisional Standing Committees. Paragraph (A) Education and Hospitals Division. Delete: Committee on Postgraduate Education. Add: Committee on Continuing Medical Education.

Section 5. Duties of Committees. Par. 5. (Delete the underlined words and add the words in capitals).

Committee on Postgraduate Education COMMITTEE ON CONTINUING MEDICAL EDUCATION. The Council annually shall nominate to the House of Delegates a Committee on Post-

graduate Education COMMITTEE ON CONTINUING MEDICAL EDUCATION to consist of not less than seven members and nominate the chairman thereof. The function of the committee shall be to plan and make available programs of postgraduate CONTINUING MEDICAL education for members of the Society, and to cooperate with university and other agencies within the state for the extension of postgraduate CONTINUING MEDICAL education of FOR physicians.

INTRODUCED BY THE HOUSE OF DELEGATES ON 4-27-71

4. Committee on Rural Health

Purpose: To change the size of the Committee on Rural Health so that it will consist of not less than eight members. It is the feeling of this Committee that the socio-economic part of medicine is taking an ever-increasing role in its deliberations and that the problems of rural health are being increasingly studied nationally and in New England; thus, the Committee should no longer be restricted to a membership of not more than eight members.

Amendment

Article XI—Divisional Boards and Committees

Section 5. Duties of Standing Committees. Par. 25. Committee on Rural Health. (Delete the underlined word and add the word in capitals.) The Council annually shall nominate to the House of Delegates a Committee on Rural Health to consist of not more LESS than eight members and shall nominate the chairman thereof.

SUMMARY OF ACTIONS

Thursday, August 19, 1971

I. Attendance

Present in addition to the Chairman, Dr. K. F. Brandon, and the Vice-Chairman, Dr. D. A. Grendon, were: Drs. Weber, Jr., Cramer, Spitz, Nolan, Granoff, Dean, Gardner, Fabro, Bradley, Ragland, Jr., Harwood, Pelz, Roch, Nemoitin, Friedberg, Root, Jr., Freedman, vonGlahn and Klare.

Also present were: Mrs. Lindquist, Mr. Sullivan, Mr. Tomat, Mr. Martell (FCMA) and Dr. Richards.

Absent were: Drs. Backhus, Hess, Rem, Johnson, Wilson, Palomba, VanSyckle, Luby, Harkins, LaBella and Dambeck.

II. Routine Business

Approval of Minutes

As printed and distributed, it was VOTED to approve the minutes of the meeting of July 14, 1971, with several amendments to be noted.

Life Memberships

It was VOTED to approve applications for Life Membership received from the following eligible Active Members:

Maxwell Bogin, 340 Capitol Avenue, Bridgeport—(FCMA)—1/1/72

Frank H. Couch, 32 Prospect Hill Road, Cromwell—(MCMA)—1/1/72

Joseph N. D'Esopo, 614 Orange Street, New Haven—(NHCMA)—1/1/71

Edward H. Diamond, 71 East Avenue, Norwalk—(FCMA)—1/1/72

Aaron Eimas, 340 Capitol Avenue, Bridgeport—(FCMA)—1/1/72

Milton Harrison, 145 Pago Pago Drive, Naples, Florida—(NLCMA)—1/1/71

Stevens J. Martin, 115 Ferncliff Drive, West Hartford—(HCMA)—1/1/72

John C. Murphy, 21 Alpine Street, South Yarmouth, Mass.—(FCMA)—1/1/72

Wilson Powell, 2240 Ridge Road, North Haven—(NHCMA)—1/1/71

Harold E. Smith, Way Road, Middlefield—(MCMA)—1/1/71

Albert W. Snoke, 100 Santa Fe Avenue, Hamden—(NHCMA)—1/1/72

Resignations, Appointments, Etc.

(a) *Committee on Organ and Tissue Transfers:* It was VOTED to accept the resignation of Edward J. Montoni, Winsted, as a member of this Committee. A replacement was *not* made.

(b) *Task Force to Plan and Reorganize Nursing Education and Nursing Service:* It was VOTED to appoint Kurt Pelz, Wallingford, to serve on this Task Force as a representative of the Society.

Date of Next Meeting

The next meeting of the Council is scheduled to be held on Wednesday, September 15, 1971, starting at 2:00 P.M.

III. Old, New and Special Business

Communication—Connecticut Blue Cross

It was VOTED to file a communication received from Joseph F. Duplinsky, CBC President, which read as follows:

"Your letter of July 27, 1971, indicating interest in the recently formed Blue Cross Medical Advisory Committee, has been received. The action of the Council of the Connecticut State Medical Society requesting that up to six of twelve physicians on the Blue Cross Medical Advisory Committee be designees of the Connecticut State Medical Society will be con-

sidered at the next Blue Cross Executive Committee meeting in September. We will reply further to your proposal immediately after the above meeting."

Report—Delegates to the American Medical Association

It was VOTED to accept with commendation a report filed for the AMA Delegates, submitted by Norman H. Gardner, East Hampton, on the principal proceedings of the meeting of the AMA House of Delegates, Atlantic City, 6/20-24/71; also to receive as information the verbal remarks made by several other Delegates, Alternate Delegates and CSMS Officers who attended the meeting.

It was further VOTED to take several actions, based on Dr. Gardner's report, as follows:

(a) To approve as an integral part of CSMS policy re "Physician's Assistant", and to transmit to the next meeting of the CSMS House of Delegates with Council recommendation for approval, a resolution adopted by the AMA House of Delegates as follows:

RESOLVED: That it is the right and duty of the physician to do or cause to be done anything for the patient that his medical care requires, and that the physician may properly delegate technical procedures to a properly qualified allied health worker; and be it further

RESOLVED: That medicine reaffirm the principle that whatever privileges may at any time be granted either to allied health workers or to independent limited practitioners, such grant in no way circumscribes the physician's authority in that field and in no way restricts the practice of medicine by the physician.

(b) To approve, and transmit to the next meeting of the CSMS House of Delegates with a recommendation for approval, a resolution adopted by the AMA House of Delegates as follows:

RESOLVED: That the American Medical Association urge all physicians to limit their use of amphetamines and other stimulant drugs to specific, well-recognized medical indications.

Further, to transmit this resolution to the component County Medical Associations, apprising them that the resolution will come before the House of Delegates in November, and requesting that the memberships (at the forthcoming semi-annual meetings) be given an opportunity to act on the resolution and instruct their Delegates to the CSMS House of Delegates to vote on the resolutions in accordance with their subject actions.

- (c) To approve, and transmit to the next meeting of the House of Delegates with recommendation for approval, a resolution adopted by the AMA House of Delegates which "encourages state medical societies and component county associations to establish liaison relationships with the school systems in their respective areas and to provide appropriate assistance in the field of health education, particularly relating to critical health areas such as drug abuse, smoking and health, venereal disease and quackery."; also, to transmit copies of the resolution to the component County Medical Associations, apprising them that the resolution will come before the CSMS House of Delegates in November, and requesting that their memberships (at the forthcoming semi-annual meetings) be given an opportunity to act on the resolution and to instruct their Delegates to the CSMS House of Delegates to vote on the resolution in accordance with their subject actions; also, to transmit as information to the members of the CSMS Advisory Committee on School Health copies of the subject resolution.
- (d) To request J. Alfred Fabro, Torrington, to draft and submit to the Council for consideration at the next meeting, a resolution on "Due Process" (as recommended by the Joint Commission on Accreditation of Hospitals) with respect to the resolution of medical staff-hospital problems. The request to Dr. Fabro was prompted by a report of the AMA Judicial Council which called for "a fair and objective hearing for any physician whose professional conduct is being reviewed, and called upon medical societies and hospital medical staffs to provide the basic guarantee of 'due process' for all physicians"; also, on a report of the AMA Council on Medical Service which recommended "that governing bodies and medical staffs should be urged to develop mechanisms for resolving disputes internally, in accordance with the procedure for due process as outlined in the Standards of the JCAH".
- (e) To note with commendation that J. Alfred Fabro, Torrington, had served with distinction as chairman of the Reference Committee on Rules and Order of Business.
- (f) To invite J. Alfred Fabro, Torrington, to draft and submit to the Council for consideration at the next meeting, a resolution concerning "consent" (by parents or guardians) with respect to the giving of contraceptive advice to minors

by physicians. This invitation to Dr. Fabro was based on a subject statement approved by the AMA House of Delegates which advocated that "the teenage girl whose sexual behavior exposes her to possible conception have access to medical consultation and the most effective contraceptive advice and methods consistent with her physical and emotional needs; that "the physician so consulted be free to prescribe or withhold such contraceptive advice in accordance with his best medical judgment and the best interests of his patient"; and that "the physician should make a definite effort to obtain consent from the minor's parents or legal guardian whenever possible".

**Final Report re RV Guide,
Committee on Third Party Payments**

Having received and considered the subject report and recommendations, presented by S. Pearce Browning, Chairman of the Committee on Third Party Payments, the Council VOTED to approve definitive implementation of the publication and distribution (to the membership) of a 1971 CSMS RVS (approved by the House of Delegates, (4/27/71) subject to the following changes:

- (a) Change the title of the document from "1971 CSMS Relative Value Scale" to "1971 CSMS Relative Value Guide".
- (b) Under Section on Surgery (Gynecology): Add "Cryo-Surgery of the Cervix", Code No. 57515, Unit value 1.5, follow-up days-60. Also, change from 0.8 to 1.0 the unit value of Code No. 58340—Injection Procedure for Hysterosalpingography.
- (c) Omit (disapprove) the changes for obstetrical procedures recommended by the Connecticut Society of American Board of Obstetricians and Gynecologists, Inc.

The Chairman extended the thanks of the Council to Dr. Browning for his appearance and presentation, and commended the Committee on Third Party Payments for completing its task of developing the RV Guide.

Presentation—Chairman, COMPAC Board of Directors

The Council was joined by Leonard Flom, Fairfield, recently-elected Chairman of the Board of Directors of the Connecticut Medical Political Action Committee, who outlined his plans for increasing the membership and effectiveness of COMPAC and asked for the personal cooperation of all members of the Council in helping him to achieve the goals. He described in some detail a recruitment program called "Checkmate", and urged all mem-

bers of the Council to promote this concept at the meetings of their respective County Medical Associations. The Chairman, on behalf of the Council, thanked Dr. Flom for his appearance and presentation.

Report—Judicial Committee Actions

It was VOTED to file a report (minutes of a meeting of 6/17/71) received from the Judicial Committee and to take action on two specific matters contained in the report as follows:

- (1) It was VOTED to approve a decision of the Judicial Committee concerning the rights of persons in pre-trial detention as follows: "A patient in pre-trial detention should have the right of free choice of his or her physician, provided it does not interfere with due process of law and provided it does not interfere with the duties of the responsible attending prison physician". It was further VOTED to transmit notice of this action to Dr. Arthur Ebbert, Jr., New Haven, who originally requested a Council opinion in this matter, and to the State Commissioner of Corrections.
- (2) It was VOTED to approve a decision of the Judicial Committee, based on its inquiry into a situation in which a member complained that his promotion to Attending Staff status was being denied for reasons unknown to him, as follows: "A hospital medical committee on privileges is ethically obligated to give a physician reasons in writing for failure to promote (as in this specific situation), in spite of the fact that the bylaws do not provide for application for promotion". It was further VOTED that the physician complainant, the chairman of the medical board and the president and members of the board of directors of the hospital concerned be advised in writing that this decision of the Judicial Committee has been upheld by the Council at this meeting.

Document—"Liaison Between CSMS Council and Hospital Medical Staffs"

It was VOTED to file a subject document, prepared and submitted by J. Alfred Fabro, Torrington, and it was further VOTED to adopt a subject resolution as follows:

RESOLVED: That the Council of CSMS seek ways to increase communication and liaison between hospital medical staff representatives and the Council for their mutual benefit; and be it further

RESOLVED: That the CSMS Committee on Hospitals, *without* joint discussion with representatives of the Connecticut Hospital Association,

be requested to draft and submit to the Council recommendations designed to implement the above-stated purpose.

Communication—Connecticut Society of American Board Obs-Gyn

The Council VOTED to file a resolution received from CSABOG which "deplored" the position on use of available obstetrical beds (combined unit) taken by the House of Delegates on 4/27/71 and informed the Council that "representative members of CSABOG stand ready to meet with appropriate persons of CSMS to adjudicate this matter". It was further VOTED to inform the officers of CSABOG that the Council is bound by the position taken by the House of Delegates on this subject, but that any member of CSMS is privileged to introduce a resolution at the next meeting of the House (November 17, 1971) calling for a change of the current position and to appear to testify in support of such resolution.

Proposed Survey—Connecticut Society of Physical Medicine

It was VOTED to endorse a survey proposed by the CSPM, and approved by the Committee on Rehabilitation, which would "attempt to determine why patients are admitted to extended care facilities, how and why they receive therapy and to what effect". The survey will be conducted by the Connecticut Society of Physical Medicine, without expense to the Society. It was further VOTED to inform CSPM that this endorsement is given with the understanding (offered by CSPM) that the information derived from the survey "will be submitted first to CSMS as a report, for its use and study".

Report—Committee on Hospitals

Actions were taken on a three-part report submitted by this Committee as follows:

- (1) It was VOTED to file the first item of the report, which informed the Council that the Committee "supports the resolution of the House of Delegates (4/27/71) on the admission of non-obstetrical patients to maternity units".
- (2) It was VOTED to file the second item of the report, which informed the Council that the Committee requests the Council "to attempt to resolve the situation (differences)" between the position of the House of Delegates, the Committee on Maternal Morbidity and Mortality and portions of the report of the Technical Advisory Committee to the CHPC "Obstetrical Services in Connecticut" study with respect to the admission of non-obstetrical patients to maternity units. The Committee is to hear all sides on this question but that the to be informed that the Council has attempted

Council is bound by the action taken by the House of Delegates on 4/27/71 unless and until such action is rescinded or modified.

- (3) It was VOTED to approve a proposal of the Committee that "the community hospitals be polled through the chiefs of staff" on the CSMS policy re admission of non-obstetrical patients to maternity units "who would discuss the subject policy with their staffs and submit feedback to the Council on how this policy could be implemented in their local hospitals".

N.B.: *The foregoing is a summary of the proceedings and action of the Council on August 19, 1971. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by an interested member of the Society.*

Placement Opportunities

Physician for Emergency Room Duty—Splendid opportunity for qualified physician to work with medical group to provide around-the-clock coverage in Emergency Department for accredited General Hospital of 325 beds and modern supporting services. New England university town, two hour drive to New York and Boston. Hospital serves population of 125,000. Educational affiliation with university medical school. Liberal contract. Send curriculum vitae to Connecticut State Medical Society Placement Service, 160 St. Ronan Street, New Haven, Connecticut 06511.

Emergency Department Physician—Full time on or about September 1, 1971 to join well-established hospital group. Connecticut license essential. Contact Administrator, Meriden-Wallingford Hospital, 181 Cooke Avenue, Meriden, Connecticut 06450. (203) 238-0771.

General Medicine—Opportunity in Connecticut shore community few miles from New Haven. Fully established practice. Office equipped for electro-cardiography and x-ray. Contact Mrs. Michael J. Carpinella, 48 Kirkland Street, Branford, Connecticut (1-203-488-3557).

General Practice—Excellent location for general practice. Servicing 12 to 15 thousand people. Rural setting between Fairfield County, New Haven and New York. 10 miles from Norwalk and Danbury Hospitals.

General Practice—Two-man partnership in General Practice in 19,000 population community needs third man. Excellent opportunity at this time. Two other doctors in town retiring. Contact: Cheshire Medical Group, Cheshire, Connecticut.

General Practitioner Preferred—Staff position(s) with company in Hartford area. Advisory in nature. Non-diagnostic. Non-clinical. Connecticut license required. 20-25K range. Contact William A. Larson (203) 547-0900.

Staff Physician—Full time staff physician wanted for the Masonic Home and Hospital, Wallingford, Connecticut. A geriatric and chronic disease hospital, fully licensed and accredited. Excellent salary, a quiet life, good research possibilities. Connecticut license required. Contact Kurt S. Pelz, M.D., Executive Director or Ulrich K. Rathey, M.D., Medical Director at the Masonic Home and Hospital. (203) 265-0931.

Placement Wanted

Allergy—51 years of age, Certified, wishes solo, group, associate and industrial type practice in a medium or small size community in Connecticut. Would consider doing some general medicine with emphasis on Allergy. Connecticut license. Available immediately.

Allergy-Internal Medicine—32 years of age, Eligible with National Boards, wishes solo, group, associate or institutional type practice in a large or medium size community in Connecticut. Connecticut license. Contact Robert E. Weinstein, M.D., Department of Allergy, Henry Ford Hospital, Detroit, Michigan.

General Practice—36 years of age, wishes group, associate, solo, industrial and institutional (in that order) practice in a medium, large or small size community in Connecticut. Would consider doing minor surgery according to training. Available immediately. Contact: SchueYuan Liao, M.D., 507 Hawkeye Court, Iowa City, Iowa 52240.

General Practice—42 years of age, with National Boards, wishes institutional type practice in Connecticut. Presently in practice. Main interest is in salaried position, possibly in institution (e.g., house physician, surgeon assistant, emergency room). Prefer position near Stamford area. Available immediately. Contact Richard Updegraff, M.D., 2724 Farragut Avenue, Chicago, Illinois 60625.

Internal Medicine—31 years of age, Certified, wishes group type practice in a medium size community in Connecticut. Available immediately.

Internal Medicine—29 years of age, National Boards, wishes group, associate or institutional type practice in Connecticut. Presently in practice. Military obligation completed. Available immediately.

Internal Medicine—32 years of age, Certified with National Boards, wishes group or associate type practice in a medium size community in Connecticut. Connecticut license. Available immediately. Contact: J. Peter Lawler, M.D., Box 192, Naval Hospital, Portsmouth, Virginia 23708.

Internal Medicine—46 years of age, Eligible with National Boards, wishes solo, group, associate or institutional type practice in a large, medium or small community in Connecticut. At present time retiring after 20 years of Naval duty as Chief of Medicine and Executive Officer of Naval Hospital. Available immediately. Contact Stuart H. Martin, M.D., Otrs. 2, Naval Hospital, Annapolis, Maryland 21402.

Obstetrics and Gynecology—36 years of age, Eligible, wishes solo, group or institutional type practice in a medium size community in Connecticut. Presently in practice. Connecticut license. Available immediately.

Orthopedic Surgery—34 years of age, Eligible, wishes associate type practice in Connecticut. Special training in spine and hand surgery. Available immediately.

Orthopedics—36 years of age, Eligible with National Boards, wishes associate or institutional type practice in a medium size community in Connecticut. Also interested in academic position with special interest in Biomechanics. Available immediately.

Otolaryngology—32 years of age, Certified with National Boards, wishes solo, group, associate or institutional type practice in a large community in Connecticut. Available

immediately. Contact Melvin J. Gunsberg, M.D., Box E, DeWitt Army Hospital, Fort Belvoir, Virginia 22060.

Otolaryngology—32 years of age, Eligible with National Boards, wishes group or associate type practice in a medium size community in Connecticut. Major interests are in: Facial Plastic Otolaryngology but can and will do all aspects of the specialty. Available immediately. Contact: Alvin D. Oscar, M.D., 4419 Royal Oak Court, Columbus, Georgia 31907.

Pediatrics-Hematology—35 years of age, Eligible, wishes solo, group or institutional type practice in a medium size community in Connecticut. Available immediately. Contact Chi-Yen Kuo, M.D., 20 St. Paulis Court, Apt. 1D, Brooklyn, New York 11226.

Psychiatry—33 years of age, Certified with National Boards, wishes to locate in Connecticut. Presently in practice. Applied for Connecticut license. Available immediately. Contact: Charles F. Rich, Jr., M.D., Box 146, USAF Hospital, Chanute Air Force Base, Illinois 61866.

Surgery—Thoracic—33 years of age, Certified, wishes solo, group, associate or institutional type practice in a large community in Connecticut. Available immediately.

Surgery—General and Vascular—33 years of age, Certified, wishes solo, group or associate type practice in a medium or small size community in Connecticut. Presently in practice. Would prefer location near Long Island Sound. Available immediately. Contact Joseph A. Bardenheier, III, M.D., 34 Bayside Avenue, Newport, Rhode Island 02840.

Surgery—32 years of age, Certified, wishes solo, group or associate type practice in Connecticut. Presently in practice. Available immediately. Filed for Connecticut license.

Surgery—36 years of age, Certified, wishes group or associate type practice in a large or medium size community in Connecticut. Would consider thoracic and cardiovascular surgery. Military obligation completed. Available immediately.

Surgery-Cardiovascular-Thoracic—39 years of age, Certified (General Surgery) Eligible (Thoracic Surgery), wishes solo, group, associate or institutional type practice in a large or medium size community in Connecticut. Presently in practice. Applied for Connecticut license. Available immediately.

Surgery—37 years of age, Certified, wishes solo, group, associate, or institutional type practice in a large or medium size community in Connecticut. Presently in practice. Available immediately. Contact A. K. Patel, M.D., Box 70, Inverness, Nova Scotia, Canada.

Surgery—Vascular—36 years of age, Eligible, wishes associate or institutional type practice in Connecticut. Available immediately.

Urology—36 years of age, Eligible, wishes group, associate or institutional type practice in Connecticut. Available immediately.

ANYONE INTERESTED IN THE ABOVE IS ASKED TO CONTACT THE PHYSICIANS PLACEMENT SERVICE, 160 ST. RONAN STREET, NEW HAVEN, CONNECTICUT 06511.

Addict Treatment Programs

(*Science*: 173, 504, August 6, 1971). Clinical trials of narcotic antagonists in the treatment of heroin addicts are taking place in a number of small programs that usually involve no more than 15 patients at a time.

The largest and oldest cyclazocine program in the country is at the Metropolitan Hospital in New York City. After a hospital stay for detoxification, medical treatment evaluation and accommodation to cyclazocine, the patients are treated on an out-patient basis.

One of the narcotic antagonist programs using naloxone is that of the Connecticut Mental Health Center in New Haven. The program gets around the problem of naloxone's limited period of action by operating as a day-patient facility. The patients, adolescents in this case, take part in vocational and recreational activities; at the end of the day, they receive their naloxone and leave for the night. In addition, the program relies heavily on what the director calls psychosocial intervention, the attempt to replace the drug culture for the addict by making available to him alternative life style goals and activities.

All of the existing antagonist programs are still experimental in character and design but many report encouraging results. In some cases patients who are still being treated with cyclazocine are working and living an apparently drug-free existence some 2 years after entering the program.

The patients themselves appear to be satisfied that treatment with an antagonist is a good thing—those contacted by *Science* expressed fears about being on the streets again and said that they were glad to have an extra bit of security.—L.H.N.

Carbon Monoxide Seems To Have A Direct Toxic Effect

(*JAMA*: 217, 21 1971). Carbon monoxide can produce a sharp reduction in oxygen consumption and consequently curtailed energy production in mammalian cells according to Dr. Mitchell L. Rhodes. In the past toxicity was not believed to occur and its effects were ascribed to the hypoxia resulting from the formation of carboxyhemoglobin.

He studied mouse lung tissue slices incubated alternately with oxygen-enriched air with and without adding carbon monoxide. With C_0 and O_2 there occurred complete and immediate inhibition of cellular O_2 consumption. When the C_0 was washed out of the tissue the oxygen starved cells began to recover.—L.H.N.

Weir Mitchell's Address On Instrumental Precision In Medicine In The Perspective Of 70 Years

Hebbel E. Hoff, M.D., Ph.D.

III

Enumeration of The Pulse

While we have dealt in greatest detail with the general impact of Mitchell's address, its greater part concerned the *early history* of instrumental precision in medicine, and this aspect deserves brief notice. Here Mitchell dealt almost wholly with two measurements, the temperature of the body and the frequency of the pulse, and it is clear that he had delved into his subject and that it had been an interesting search. "The pleasure it has given me" he said, "makes me wish that our great schools possessed chairs of medical history, and that amidst our too busy life more of us could acquire some part of the interest which for me the history of medicine has always had. Without the great Library of the Surgeon General I should have had no story to tell you; but, even good as is that noble collection, it has failed me in the last year as to some twenty books I wanted. One of them was not in any London library, and one was lost from its place in the great French Library." In this statement we can see something of a real interest in medical history, in medical libraries, and in the search for books, and can see too that as he had worked to secure John Shaw Billing's appointment at the Surgeon General's Library many years before, he had probably had in mind even then a sincere intent to develop the country's cultural resources in medicine.

Mitchell began the history of both thermometry and determination of the pulse with Galileo, and the inventions of the thermometer and the pendulum, both of them discoveries that revolutionized more than medicine. Certainly Galileo was implicated in the discovery of the thermometer, but so also was Sanctorius, a physician and Italian contemporary of Galileo's who clearly took the crude

thermoscope of earlier days, gave it gradations, and used it to measure temperature. Curiously enough, Sanctorius was also represented in the use of the pendulum to time the pulse, and Mitchell is inclined to accuse him of adopting both instruments from Galileo without giving Galileo the credit he deserved. Modern critical studies do not appear to have made clear the relative claims for Galileo and Sanctorius with regard to the thermometer, but there seems to be no question but that the idea of the pendulum came to Galileo when at the age of 18 and a medical student in Pisa he conceived of the laws of the pendulum by timing the swings of the bronze lamp in the Duomo at Pisa and timed them by comparison with his pulse. Again, however, the use of the pendulum in medicine derives largely from Sanctorius and the connection between Sanctorius and Galileo in both developments remains obscure. Then as now scientists were not always meticulous about their bibliographies and we can only suspect a closer relationship between Galileo and Sanctorius, Drebbel, Fludd, and Wren then appears at this distance and after what can only be described as overly partisan distortion of the historical record.

However this may be, there can now be no doubt that enumeration of the pulse was not original with either Sanctorius or Galileo, although again no historical connections can be made out. Certainly the pulse was a major focus of study in the early days of medicine; physicians recognized its connection to the heart in Egypt and wrote about it in ambiguous language that suggests counting and quantitation. Some 3,000 years B.C. an unknown Egyptian surgeon wrote in the manuscript now known as the Edwin Smith Surgical Papyrus that, "as far 'Thou examinest a man', it means counting anyone like counting things with a bushel. For ex-

aming. . . . measuring. . . . is like one's counting a certain quantity with a bushel, or counting things with a bushel in order to know. . . . It is like measuring things with a bushel which. . . . one in whom an ailment is counted like measuring the ailment of a man in order to know the action of the heart."

It is difficult to interpret these broken and partially untranslatable sentences as explicit references to enumerations of the pulse, and perhaps the writer is referring to some sort of cadence counting which is the clear impression of a much later work by Asaf Judaeus. Its origin is still in question, and although the influences of both Hippocrates and Galen are clearly to be seen there is much to suggest even older sources in mesopotamian medicine. The paragraph introducing a description of the various aspects of the pulse gives a feeling of antiquity; recognizing the association of the pulse with the heart it uses the old expression *sinew* which predates Galen and his recognition that *sinews* included nerves, arteries, and tendons, as follows:

"These are the words of Yohanan the Astrologer on the palpation of the sinew of the arm, expounding the signs of disease. He spoke of the signs in palpating the arm, recounting their characteristics, expounding the kinds and classes of the pulsations, distinguishing among the pulses, the slow, the rapid, the intermediate, and those that change their rate, until fully elucidated. He said: I shall teach you that the pulsations of the sinews come from the spirit of life. Their origin is in the heart, they proceed to the ends of the body, and from the ends of the body they return to the heart. Like water driven by the wind, whose waves come and go, so is the pulse of the sinew which goes from the heart to the ends of the body. When it emerges hot, and when it returns from the ends of the body to the heart, it returns cold. Like a fluttering wing coming and going in the wind, so is the pulse; as the wind comes and goes, so the pulse, which comes from the heart, returns to the heart."

The specific directions Asaf gives in the following selections give an impression of cadence counting up to twelve; it is evident that quality and rhythm are both of interest, and both defy clear description:

"Asaf spoke of the characteristics of the pulsation of the sinew of the arm, in order to teach, by reason and wisdom, how to palpate and feel. If you palpate a man's sinew, observe if it

pulsates twelve equal pulsations, according to the man's vigor. Whether weak or powerful, if it pulsates twelve times of one kind, you should know that the man is sound and healthy, and that his elements and their properties are combined equally.

If you palpate and it becomes apparent that it pulsates four unequal times and the fifth increases as the deer leaps in the might of its lightness, you should know that the sorrows of death have encompassed him, and he is nearing death. If you palpate at eventime, and the pulse changes, and the sinew is dragging in the body as a scorpion drags its tail, you should know that this one is also nearing death. If you palpate and observe that it pulsates twice or thrice, and then it escapes from under your finger, and becomes silent for a while and then pulsates, you should know that this one is also near death.

If you palpate and observe that it pulsates three times weak and five hard, you should know that he has some hope."

Neither Hippocrates or Galen mention quantitative study of the pulse, but a Greek manuscript attributed to a physician of the name of Markellinos, who is otherwise unknown, contains an explicit statement that makes it unmistakably clear that Herophilus, a renowned anatomist and physician of Alexandria, who was born around 540 B.C. (the confluence of the venous sinuses of the dura mater of the brain is named after him the torcular, or wine press, of Herophilus), did actually enumerate the pulse, as the brief quotation tells us:

"Herophilus placed such a great faith in the frequency of the pulse as a reliable symptom that he constructed a clepsydra with a capacity corresponding to the normal pulse beat at each age. In visiting patients he set up the clepsydra and felt the pulse of the feverish; then the more the pulse beats exceeded the normal number by the time the clepsydra was filled, all the more was the pulse accelerated according to his explanation; that is to say the more or less was the fever."

With this brief but unmistakable description the subject appears to have disappeared from medicine for more than a millenium and a half. In the classical medicine of China the palpation of the pulse was a highly developed art but is questionable whether the frequency was ever counted; accounts of oriental medicine generally derive from Dutch accounts dating from the 1680's and 1690's and

modern reviews tend to telescope time and predate additions made in fact after the arrival of the Dutch.

Part of the difficulty in pulse counting comes from the means of measuring subdivisions of time. The hour to the mediterraneans was a flexible one varying with the season of the year, and this variable hour was fractionated no more than to twelfths. The *minute* seems to be implied in certain phraseology in the Apocrypha but as late as 1315 it might have meant either the sixtieth part of an hour or of a day. Shortly thereafter it became generally restricted to the sixtieth part of an hour, but it was not until the end of the 16th century that some clocks were equipped with minute hands, and a very few with second hands. Only then was John Floyer able in 1707 to design a pulse watch to run for just a minute; thereafter all pulse rates could be expressed in terms of the minute.

This was yet to come, and the first mention of counting the pulse to follow the Markellinos came in a remarkable dissertation on the balance written in 1450 by Nicholaus of Cusa, a remarkable personality who in many ways pointed the way from the Middle Ages to the Renaissance. In his advocacy of quantitative studies he asked: "Does thou not think, that if one had an houre glass made with water, and out of a straight and narrow hole thereof should suffer so much water to runne into a Bason, as would runne, whilst the pulse of a sound young man should stick an hundred, and then should doe the like while a sicke man's pulse strock a hundred, that there would be a great deale of difference between the weights of these water? . . . By the weight of the water, therefore a man might come to the diversity of the pulse, in a young man, in a sicke man, and in a sound man."

Is this a rediscovery of Herophilus' pulse count with a clepsydra? It might well be, but it is perhaps more likely that Cusa, whom we know to have been a voluminous reader, and an avid collector of greek manuscripts, had come across the Markellinos manuscript itself in one of the hundreds of monasteries he must have visited in the course of his duties, or seen another reference to Herophilus that is yet unfound or forever lost, and that there was indeed a direct link, however tenuous it may now appear, between Markellinos and Cusa.

The same must be asked about the possibility of a connection between Cusa and Galileo and Santorinus, and again history is silent and conjecture alone can speak. Cusa's writings were in some cur-

rency, though they were by no means popular. The essay containing the recommendation to quantitate the pulse was included in a popular edition of Vitruvius, where a wide audience may have seen it. Still another tantalizing bit of evidence points to a direct connection between Cusa and Galileo. In his essay, Cusa had gone on to ask, "Whether might not a man by letting a stone fall from a high tower, and letting water run out of a narrow hole into a Basin in the mean time; and then weighing the water that is runne out, and doing the same with a piece of wood of equal bigness, by the diversity of the weights of the water, wood, and stone, attain to know the weight of the aire?"

IV

Silas Weir Mitchell

"Silas Weir Mitchell was almost a genius. His contemporaries believed that he was one, an opinion Mitchell came to share." So wrote one biographer. Harvey Cushing said that "He was probably the most picturesque and many-sided physician of his times, and knew it . . ." I suspect that both assessments are of the Weir Mitchell of the 1900's, not a little surprised at the continuance of his physical and mental powers long after most of his contemporaries and even many of his juniors were dead or disabled, and inclined to take a certain not too secret pride in the accomplishment. We may excuse some of this preening of his self-esteem; few enough of us achieve a life span of eighty-five years (for Mitchell it was from 1829 to 1914) in virtually complete possession of our faculties to give us much of a baseline for how such persons *should* behave. For indeed, like Chief Justice Holmes, Mitchell was born when our country was in its infancy, lived through our greatest national tragedy, and witnessed the fantastic growth that brought us into the twentieth century and national greatness. He rings true in the real tests; let us disregard the conceits, if so they be, of advanced age.

Mitchell's father was born in Virginia, son of an immigrant Scottish physician, and although he moved to Philadelphia in 1815 where he graduated from the University of Pennsylvania in 1819, he retained much of the appearance, personality and life style of a Virginian. Six feet tall, skillful at games (he was one of the early enthusiastic Philadelphia cricketers and it is said that some survive) knowledgeable as to horses and good living, an excellent shot, extroverted, and of a sanguine disposition, he was well received in the company of

what was already a remarkably mature society, one of bankers, insurance executives, lawyers for estates and corporations, editors, Episcopal clergymen, and physicians, for in perhaps no city in the country was the physician as highly considered, if he had good financial prospects.

Silas Weir Mitchell, who was born in 1829, was of small stature himself, but as events proved, by no means frail, and if he lived to some extent under the shadow of an overpowering and venerated father, an older brother who resembled his father, and an older sister who was totally attached to him all her life, he listened with retention to the fine talk that flowed over the dinner table, and few have matched Mitchell in his ability to write of the play of conversation around a Philadelphia dinner table. So he became and remained a Philadelphian, and worked hard for the good life of terrapin, champagne and cigars at dinner, horses, fishing on the Cascapedia, and summers at Newport until the influx of nouveaux riches caused most of the colony to move to Bar Harbor. He practiced the code of the gentleman, and although he wrote in his novels of neurotic women as well as any author, he perhaps failed to come to a deeper understanding of the woman's personality either in his own writings or in his private life, though when dealing with the Victorians this is always a dangerous statement to make.

The idea of medicine as a career seems to have come, or to have been expressed relatively late, but he enrolled in Jefferson Medical College in 1848, graduated two years later at the age of 21, and set off for Paris, then the center of the medical world. On the way he stopped off in England to visit relatives, and it says much of the engaging qualities of the young man that one of his relatives, in the developing large business affairs of the time, tried to persuade him to remain in England and take over the business. His instincts also led him to meet Quain, Paget, and Jenner socially while in London, (his father had met Walter Scott in much the same way when *he* was in Scotland as a student between 1812 and 1814) as, in the future they would lead him into correspondence and friendships with Oliver Wendell Holmes, John Warren, Francis Parkman and James Russell Lowell to mention only writers, and Bostonians. Some have seen in this wide circle of correspondents a veiled aggressiveness for fame based on the trait of excessive self-esteem revealed in the quotations at the beginning of this section; let it be added however, that during most of the ten years Philips

Brooks served in Philadelphia he dined with the Mitchells on an average of twice a week (Philips Brooks once asked Mitchell to compose a Christmas Hymn, and when Mitchell refused, Brooks wrote it himself—it was “O Little Town of Bethlehem”). This friendship and his close friendships in Medicine must have been sound and solid.

Returning from Paris rather sooner than he had anticipated, Mitchell brought back the concept of the neurological approach to psychiatry and a concentration on the neuroses rather than the psychoses as the central theme of his whole future medical practice, and a microscope as the major instrument of his research. Then began a busy decade of practice, social and family activities, a growing correspondence, and studies on snake venom with William A. Hammond who was soon to become Surgeon General of the Army in the Civil War years.

In a way the war came to Mitchell rather than the reverse. Under Hammond's direction Philadelphia grew into a huge army medical center with some 25,000 beds distributed in a number of hospitals, one of which was a 400 bed hospital for nervous disorders, and here, with William Keen and George Morehouse, Mitchell made the studies on primary and secondary wound shock which were described in a report on Reflex Paralysis; equally important was their recognition of the phenomenon of causalgia after nerve injuries; its pathophysiology—or pathopsychology—is still unclear. Here too he first met John Shaw Billings, who remained a fast friend for life and whom he helped in large measure to get started and to continue in his great postwar career of building the Surgeon General's Library, which is now the National Library of Medicine. At a later date he befriended Noguchi no less importantly; Hammond, Keen, Morehouse, Billings and Noguchi were not friendships of expediency.

Mitchell saw no battles, but July of 1863 saw most of the physicians of Philadelphia drafted to Gettysburg as that battle came to an end. Hammond organized matters, and the locale permitted it better than at any other major battle, and the 27,000 casualties had all received primary treatment and were under shelter within 24 hours after the battle had ended. Mitchell wrote of battle in an early novel and he did so with a directness and realism that contrasts favorably with, say, the mawkish sentimentality Oliver Wendell Holmes, also a physician, used to describe his own search for his son on the battlefield of Antietam. In a last

novel Mitchell could still write: "war is a disgustingly dirty business. You don't realize that in history, in fiction or in pictures; it is filthy." Billings had been in the battle and was near John Reynolds when the General was killed by a sharpshooter on the first day of the battle, and he retained no illusions about warfare either.

After the war Mitchell's life resumed its ordered routine of practice, family life, and research, but at an accelerated pace as his reputation grew, and as with each year he moved more and more into the position of the Elder Statesman he held in his later years. He tried for election to the Chair of Physiology both at Jefferson and the University of Pennsylvania, and although he mobilized a formidable array of supporters: Holmes, Agassiz and Wyman, he was not elected to either and in the end he did not follow a conventional career.

This check to the development of his scientific and academic life may have been a factor in the development of a new career as an author, his medical career continuing at an accelerating pace. He had written a children's book, *Fuz-Buz the fly*, as a contribution to a Sanitary Commission fund drive, as well as a few poems, during the war, but now he began to write as a second career. His first short story, *The Case of George Didlow*, earned him \$80 from the Atlantic, where it was published in 1866, but it was not until 1880, at the age of 51, and after the death of his wife and his sister, that he entered the new activity fully with a novel *Hepzibah Guinness* which marked out the path he would continue to explore; historical romance and the neurotic personality, in which, often against a backdrop of the ordered Philadelphia he knew so well and described in such detail, there stood out a neurotic personality, usually of a woman such as Constance Trescot, whom he could describe as "one of those rare women who, for good or ill, attract because of some inexplicable quality of sex."

His best known novel, *Hugh Wynne*, was published in 1886 when Mitchell was sixty two; it was the best seller of the year and in all sold over half a million copies. To the critics it was far from his best, but it still remains on reading list in American Literature. He considered his best novel to be *Constance Trescot*, published in 1905 when he was seventy six and the critics generally agree, ranking it with the best of his American contemporaries. At the age of 84 he sent *Westaways* his last and by no means his worst book to be published; it was based again on the Civil war, on the conflict between loyalties, on the neurotic deterioration of a personality after a head wound and on restoration after surgery, and on the effects of the "unwholesome suppression" resulting from wartime separation. Mitchell could still write of a woman's "sense of humiliation in the vast surrender of marriage."

If Mitchell was not a genius he was very close to it, in a versatility that was productive at a very high level indeed. If I have neglected a final aspect of his literary productivity, his poetry, it is because it is difficult for me to come to a judgement about it, and I would prefer to leave you with only the twelfth stanza of his *Ode on a Lycian Tomb*, written when he was sixty nine. Perhaps it was its timeliness (this was not long after *Apollo 13*) that made it especially meaningful to me, but surely it is poetry at its very best:

"For all in vain with sweet imaginings
We build of dreams another earth than ours
And high in thoughts' thinned atmosphere,
with wings
That helpless beat, and mock our futile
powers,
Falter and flutter, seeing naught above
And naught below except the earth we love."

(*This is the second of a series of two articles*).
End of part II.

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terene, SK&F). Rarely, leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with the thiazides. Watch for signs of impending coma in acutely ill cirrhotics. Thiazides are reported to cross the placental barrier and appear in breast milk. This may result in fetal or neonatal hyperbilirubinemia, thrombocytopenia, altered carbohydrate metabolism and possibly other adverse reactions that have occurred in the adult. When used during pregnancy or in women who might bear children, weigh potential benefits against possible hazards to fetus.

Precautions: Do periodic serum electrolyte and BUN determinations. Do periodic hematologic studies in cirrhotics with splenomegaly. Anti-hypertensive effects may be enhanced in post-sympathectomy patients. The following may occur: hyperuricemia and gout, reversible nitrogen retention, decreasing alkali reserve with possible metabolic acidosis, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), digitalis intoxication (in hypokalemia). Use cautiously in surgical patients. Concomitant use with antihypertensive agents may result in an additive hypotensive effect.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis; rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting (may indicate electrolyte imbalance), diarrhea, constipation, other gastrointestinal disturbances. Rarely, necrotizing vasculitis, paresthesias, icterus, pancreatitis, and xanthopsia have occurred with thiazides alone.

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Correctible Complications of Neoplastic Diseases

IV. Autoimmune Hemolytic Anemia

Howard W. Bruckner, M.D.*

Malignant disease is a common finding associated with acquired antiglobulin positive hemolytic anemia (AIHA). While chronic lymphocytic leukemia is the malignancy commonly associated with AIHA, Hodgkin's disease, reticulum cell sarcoma, multiple myeloma and acute leukemia are also important associated malignancies.¹ Of solid tumors, ovarian and perhaps prostatic tumors² and rarely mucin-producing gastric and pancreatic tumor have been reported to initiate AIHA. Solid tumors may also produce microangiopathic hemolysis, in association with bone marrow invasion. When AIHA accompanies a suspected exacerbation of solid tumor disease, biopsy of both recurrent tumor and bone marrow are indicated.

Both the malignancy and the AIHA may be consequences of defective immune recognition. Other manifestations of autoimmune disease may be present and deserve treatment. The hematological manifestations include lymphocytosis, lymphopenia, thrombocytopenia (Evan's syndrome or disseminated thrombosis with purpura), megaloblastosis (pernicious anemia), hyperglobulinemia, macroglobulinemia (bleeding and false serological studies), and hypoglobulinemia (unusual infections). The endocrine manifestations include hypothyroidism, hyperthyroidism, thyroiditis and hypoandrenalism.

The antibody responsible for hemolysis must be characterized. Warm and cold reacting antibodies require significantly different management. The specificity of the antibodies must be determined before each transfusion. A new specific isoantibody may appear during the course of transfusion therapy, and frequently produces serious transfusion reactions.

The comprehensive diagnostic evaluation of differences in antibodies and associated diseases improves the likelihood of successful selection of effective therapy. Specific therapeutic measures also

are possible if folate deficiency, adverse drug reactions, aregenerative crisis or tumor invasion are identified. A 14 day trial of folic acid, 5 mg. I.M., may be attempted if compensatory red blood cells production is less than 6 times normal and the bone marrow is megaloblastic. Pernicious anemia, a rare cause of Coomb's positive AIHA³ should be excluded if folic acid is given. Replacing all drugs, particularly antibiotics, anticonvulsants and sedatives which may produce a positive antiglobulin test, with structurally unrelated compounds may reduce hemolysis weeks later. After months, the Coomb's test may return to normal. Vigorous early treatment of infection may reduce the likelihood of acute AIHA 7 to 14 days later, or an aregenerative marrow crisis. Regular reticulocyte counts (and bone marrow examination) may identify decreased red cell production before a patient is dangerously symptomatic.

Warm Antibody Hemolytic Anemia

Prednisone is the corticosteroid and therapy of choice, successful in the management of 50-70% of cases. Its mechanism of action is unknown. It is the least expensive generic name steroid therapy. Twenty, rarely 30 or 40 mg can be given *t.i.d.* A 3% rise in hematocrit each week and a reduced transfusion requirement represent meaningful responses to therapy. A rising reticulocyte count may indicate increased hemolysis, and a feeling of well being, may represent drug euphoria, thus neither need be an indication of successful therapy. Three weeks of therapy is advisable, 10% of cases respond in the third week of treatment. Occasionally high dose intravenous ACTH may benefit a patient who did not respond to prednisone.

After the patient is clinically stable and the Hct is greater than 30, prednisone is reduced to 50 mg per day and reduced an additional 10 mg every 7 days. When the dose is 30 mg per day, it is reduced 5 mg per day every 14 days. If relapse occurs, 60 mg per day is again administered. After one week of response, prednisone may be tapered. Maintain a dose 5 mg per day greater than that which permitted relapse. After 3 months, again attempt to reduce therapy.

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Metabolic side effects of Prednisone, but not of Dexamethasone or Butamethasone, can be avoided if the total 48 hour dose is given as a single dose every 48 hours. This regimen has less antineoplastic value in acute leukemia. Its antineoplastic value in chronic lymphocytic leukemia and Hodgkin's disease remains undetermined. The schedule should be used when serious metabolic side effects appear if no alternative is available. Dexamethasone is sometime used when prednisone produces electrolyte abnormalities or gastrointestinal toxicity. Triamcinolone carries a higher risk of proximal muscle weakness and quadriplegia. If maintenance is greater than 30 mg/day or produces toxicity, additional effective therapy is required.

Elective splenectomy is an acceptable procedure for selected patients with hemolysis and a malignant disease. Estimated time of survival should be greater than three months and the patient should be a satisfactory surgical risk with hematological evidence of hypersplenism⁴ or ⁵¹Cr studies indicating increased splenic sequestration of RBC.^{5,6} The majority of the patients described had negative antiglobulin tests. Surgery is sometimes attempted, in the absence of alternative therapy, if sequestration is present over both liver and spleen.

The surgeon should evaluate the entire abdomen, restage lymphomas, mark tumors, biopsy bone, and remove ovarian cysts. Dermoids and Teratomas produce correctable autoimmune hemolytic anemia.⁷ Restaging lymphomas permits the selection of optimal antitumor therapy. Marking of tumor masses facilitates rapid evaluation of therapy. Splenectomy may improve the drug tolerance of lymphoma and chronic leukemia patients. Prednisone therapy may prove effective after splenectomy.

Surgery should be given early consideration. Post operative mortality is reported to be greater than 10% if surgery is delayed until a crisis exists. Experience and intensive postoperative support may reduce morbidity. Parenteral steroids should be used before, during and after surgery. The recent use of steroids increases the maintenance requirements. Thrombocytosis, especially greater than 1.5×10^5 platelets, may require Heparin and Dicoumarol depending on its duration and the clinical risk of thrombosis (age, immobilization and past history of vascular disease) rather than the platelet count alone. Disseminated thrombosis, sometimes associated with a low or falling platelet count, is a major risk throughout the patients course but especially in the second or third week after surgery.

Leucocytosis mimicking acute leukemia can follow splenectomy and does not require therapy.

Splenic irradiation may be useful if splenectomy is impossible and three weeks are available for a therapeutic trial. It may provide systemic control of chronic leukemia. Thrombocytopenia is a distinct hazard of irradiation and serial monitoring of platelets is mandatory even if the WBC is unchanged.

Immunosuppressive therapy can sometimes reduce steroid requirements in autoimmune hemolytic anemia and is frequently less hazardous than steroid therapy. Since both alkylating agents and antimetabolites are immunosuppressive, one should select the drug of choice for the treatment of the malignancy. Potentially curative radiotherapy should not be abandoned, when drugs are temporarily required, but the onset of autoimmune hemolytic anemia may necessitate a reevaluation of staging and antineoplastic therapy. Combination therapy appears particularly valuable in the initial management of stage III, IV lymphomas, but its immunosuppressive value is untested. As an anti-tumor agent, Prednisone, alone, is ineffective, except as an emergency, short term measure. Vincristine has some immunosuppressive value. Prolonged trials of immunosuppressive therapy may be required.⁸ Immunosuppressive therapy can be particularly hazardous in chronic lymphocytic leukemia.

Heparin, 1000 units I.V. every 6 hours, sometimes controls severe hemolysis within 24 hours. This experimental treatment should be reserved for refractory clinical problems especially if heparin inhibits the direct antiglobulin test *in vitro*.⁹ Attempt to taper heparin rapidly and maintain the patient on 50 or 100 s.c. units *t.i.d.*

Thymectomy or thymic irradiation has not affected adult AIHA. Antibodies are regenerated too rapidly to make exchange transfusions or plasmapheresis practical. Polyvalent, antsnake venom serum has been used successfully.¹⁰ Epsilon amino caprioc acid, colloidal gold and antilymphocyte serum should only be used by experienced clinical investigators. These methods remain experimental.

Transfused RBC's may be destroyed by patients who exhibit little ability to destroy their own RBC's. Restriction of activity and bed rest are preferred to transfusion therapy. Transfusion is immediately required, even if tests demonstrate non-specific incompatibility of available blood, when a change in mental status, congestive failure or cardiac ischemia is recognized.

No test can guarantee the safety of a transfusion. Antibody dilution and elution studies using blood cell panels sometimes identify specific isoantibodies which are present in addition to less dangerous nonspecific antibodies. Tests of *in vivo* survival of 50 cc of chromium 51 labeled RBCs can be used in an attempt to select the most compatible unit.

Transfusion of packed cells, without a buffey coat usually is satisfactory. Complement can increase hemolysis *in vivo* and white blood cells can produce leucoagglutinin reactions, thus saline washed packed cells transfusions may, in theory, be ideal.¹¹ Arrange for transfusions well in advance. Time consuming blood bank procedures are sometimes required because new antibodies may appear.

Prophylactic solucortef, 100 mg I.V., or Benadryl, 50 mg I.V., per unit of blood, may reduce the symptoms of a minor transfusion reaction. The danger of hemolysis is not reduced, and a valuable early warning of serious hemolysis may be lost.¹² Medications should not be placed in blood. The drugs and equipment required to manage and evaluate severe transfusion reaction must be immediately available.¹³

Cold Antibody Hemolytic Anemia

Symptomatic measures, avoiding the cold, bed rest and a warm constant environment frequently controls hemolysis and peripheral vascular symptoms. Prednisone is rarely effective, it should only be used and continued if there is strong objective evidence of need and benefit. Similarly, splenectomy is rarely effective. Intravascular and hepatic rather than splenic destruction of red cells predominates. Selected cases of mild cold hemagglutinin disease without Raynaud's phenomena or hemoglobinuria may benefit from splenectomy. A chromium 51 sequestration test may help identify these patients.

If clinical or laboratory studies suggest macroglobulinemia or a lymphoproliferative process, 3 months of treatment with alkylating agents may be particularly effective. Except for the Donath Landsteiner antibody of paroxysmal cold hemoglo-

binuria (PCH), cold antibodies are IgM antibodies. A supervised experimental trial of penicillamine may be arranged for IgM AIHA. PCH may be treated by elimination of syphilitic infection if the malignancy is coincidental. Paroxysmal Nocturnal Hemoglobinuria may produce hemolysis, pancytopenia and iron deficiency; Ham's test, the sucrose test and low leukocyte alkaline phosphatase permit diagnosis. Heparin, iron and plasma complement produce acute hemolysis in PNH. In general, plasma complement may stimulate hemolysis in IgM AIHA.¹⁴

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Electrocardiogram of the Month:

Rate-Dependent Second Degree AV Block

Yale-New Haven Hospital
New Haven, Connecticut

Prepared by
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In the normal adult 1:1 AV conduction may occur with atrial rates as high as 230 per minute. In various disease states, particularly ischemic heart disease, the recovery period of the conducting fibers in the AV junction and/or the I-V bundle system may be so prolonged that even at much slower atrial rates conduction of all atrial impulses to the ventricle cannot take place. This condition is referred to as second degree AV block. On occasion this type of conduction disturbance may be entirely rate-dependent, occurring only when the number of atrial impulses that reach the AV junction or the

I-V bundle system exceeds a critical value. At rates below this critical value the longer diastolic periods permit sufficient recovery of the conducting fibers so that 1:1 AV conduction is again possible. This phenomenon accounts for the occasional paradoxical slowing of the ventricular rate when there is a spontaneous increase in a patient's sinus rate, or when a subject with sinus bradycardia is exercised, or when the sinus rate increases after a patient receives a therapeutic dose of atropine or isuprel. Below are several examples of rate-dependent second degree AV block:

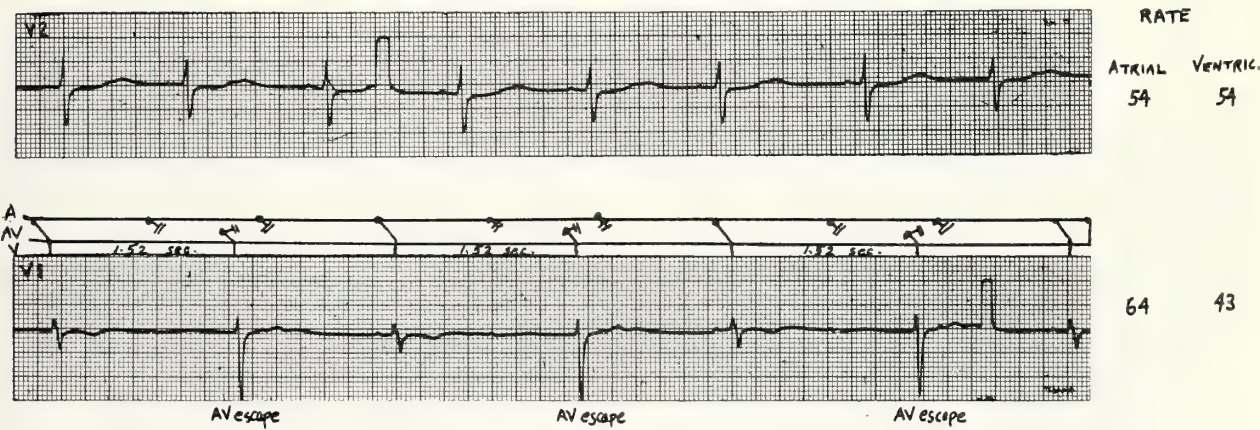


Figure 1

During the recording of lead V2 the sinus rate and ventricular rate are both 54 per minute with a PR interval of 0.16 sec. In lead V1 the sinus rate spontaneously increased to 64 per minute. At this rate the ventricles do not respond to each sinus impulse and the ventricular rate drops to an average of 43 per minute. Note in the ladder diagram that an intermittent AV dissociation has developed. Every second sinus impulse is blocked at the AV junction (2:1 AV block). The pause after the blocked sinus impulse is terminated by an escape beat arising in the AV junctional tissue at an escape rate of 39 per minute (diastolic interval of 1.52 sec.) which is faster than the effective atrial rate of 32 (sinus rate of 64 divided by 2). The AV junctional escape beats also exhibit aberrant I-V conduction. In this patient the critical rate for the development of 2:1 AV block is somewhere between 54 and 64 per minute.

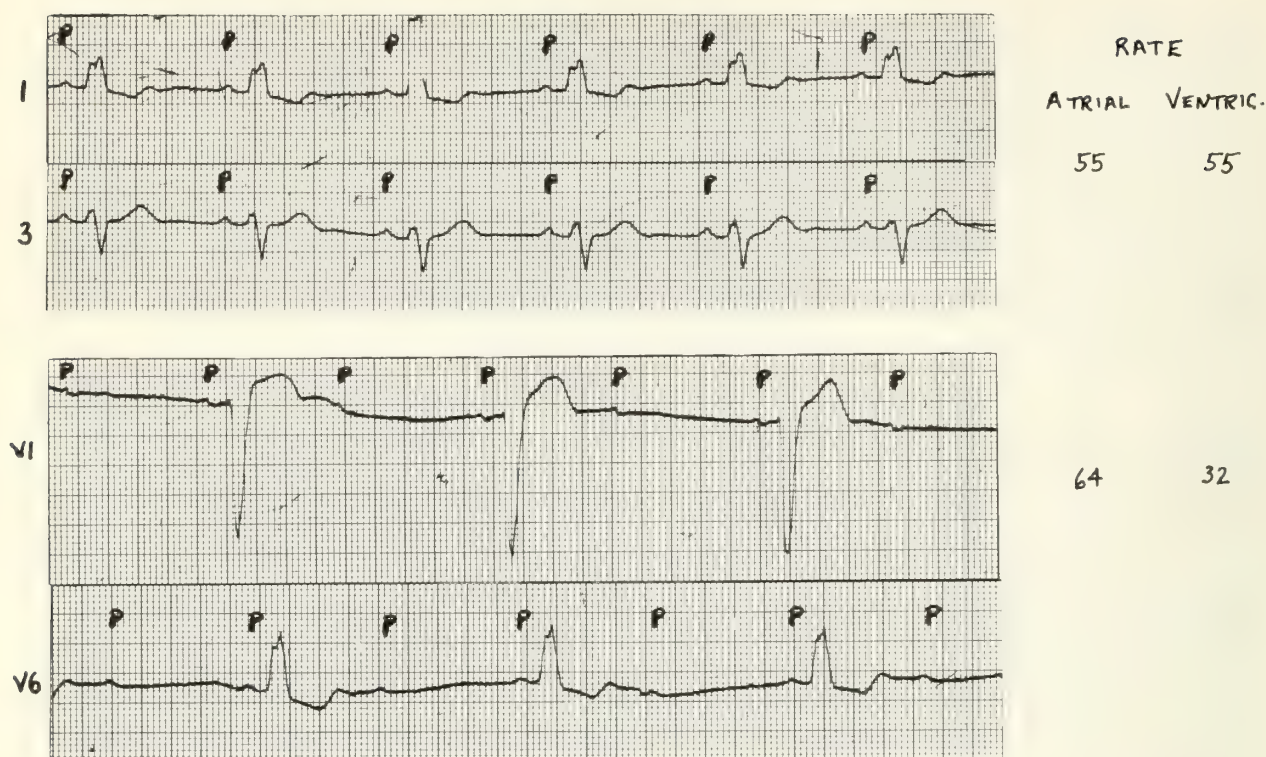


Figure 2

During the recording of leads 1 and 3 the sinus rate is 55 per minute. 1:1 AV conduction is present. All sinus impulses reach the ventricles with a PR interval of 0.20 sec. The QRS complexes measure 0.14 sec., are characteristic of LBBB, and indicate that the right bundle branch is intact and that the left ventricle is activated after the right ventricle. Leads VI and V6 were recorded after administration of a therapeutic dose of atropine. The sinus rate has increased to 64 per minute but only half of the sinus impulses now reach the ventricle. The complete blocking of every other sinus impulse as the sinus rate increased must be attributed to failure of recovery in either the AV node, the His Bundle or the right bundle branch. The critical rate then is somewhere between 55 and 64 per minute.

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X-Ray of the Month

Section of Chest Diseases

Yale-New Haven Medical Center

Arnold B. Rilance, M.D., Director, Winchester Chest Clinics

C.C., #74-75-17, a 23 year old negro male, was seen in the Emergency Room of Yale-New Haven Hospital on 4/7/69 complaining of the onset of sudden, sharp precordial pain, non-pleuritic in type. Pain developed when bending over while at work. There was a questionable degree of shortness of breath. No previous history of episodes of chest pain. Negative cardiac history. For the preceeding year he had noted some cough with occasional wheezing.

Past History

Bilateral pneumonia, 1963. Survey X-ray of chest in 1968 reported normal. Patient smokes 1 to 1½ packages of cigarettes a day.

Physical Examination

B.P. 110/70. P.R. 60/min. H.E.E.N.T. negative. Chest clear. Heart normal. No palpable peripheral glands. Abdomen negative. Extremities normal. Electrocardiogram within normal limits. Chest X-ray—diffuse nodular infiltrates with bilateral hilar adenopathy consistent with a diagnosis of sarcoidosis.

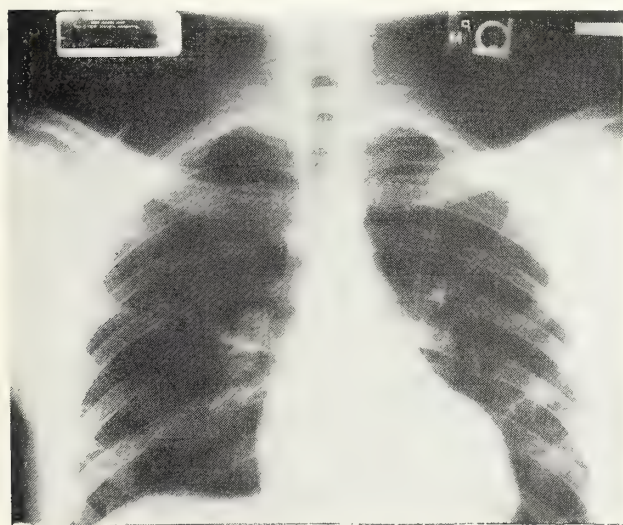


Figure 1

X-ray of chest, 4/7/69, demonstrating diffuse, finely nodular infiltration in both lungs with an early stage of hilar node enlargement.

Skin Tests

PPD, 10 T.U.—negative at 48 hours. Mumps skin test—negative.

Interval History

The patient was not seen again until 16 months later on 8/3/70 during which interval of time symptoms increased. Significantly more dyspnea and a 7 lb. weight loss were noted. Occasional mild anterior chest pain was noted. There were no G.I. complaints. Two discrete infiltrative lesions had developed on the lower legs.

Repeat X-ray of the chest revealed progressive changes in both lungs with further development of hilar nodes and paratracheal nodes.

A skin biopsy was performed which showed non-caseating granulomata consistent with sarcoidosis.

On 9/11/70, the patient was started on Prednisone, 40 mg./d, with Isoniazid, 300 mg./d. By 10/2/70, his breathing had improved but he was still aware of dyspnea with exertion. By 3/9/71, 6 months after starting Prednisone, he appeared clinically well. Mild anterior chest pain still occurs.

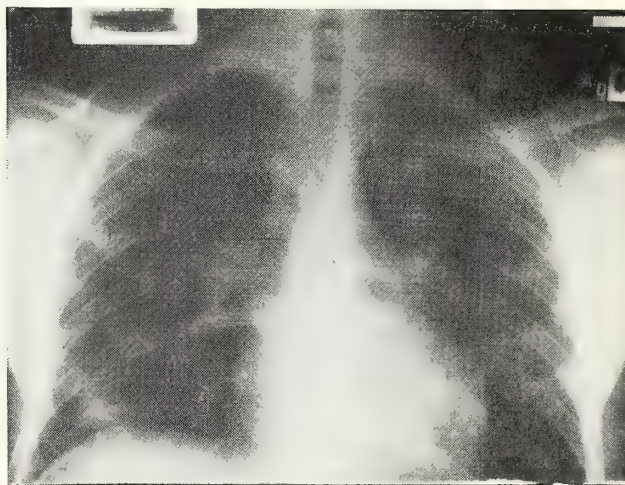


Figure 2

X-ray taken 8/12/70, 16 months later, demonstrates marked increase in size of hila of lungs and in transverse diameter of superior mediastinum. There is an overall increase in nodular infiltration with the development of several large conglomerate nodules.

He is currently taking Prednisone, 10 mg./d. with Isoniazid, 300 mg./d.

Comment

Recently a question regarding the value of Prednisone therapy in the treatment of sarcoidosis has been raised. Although the majority of patients with sarcoidosis do not need specific therapy, the value of such therapy for those patients presenting with significant disability is a matter of serious importance. The case presented here demonstrates the value of steroid therapy in such a situation. Slowly progressive deterioration both by X-ray and pulmonary function testing over a period of sixteen months is followed by rapid improvement by X-ray and in pulmonary function over a period of two months following the institution of steroid therapy.

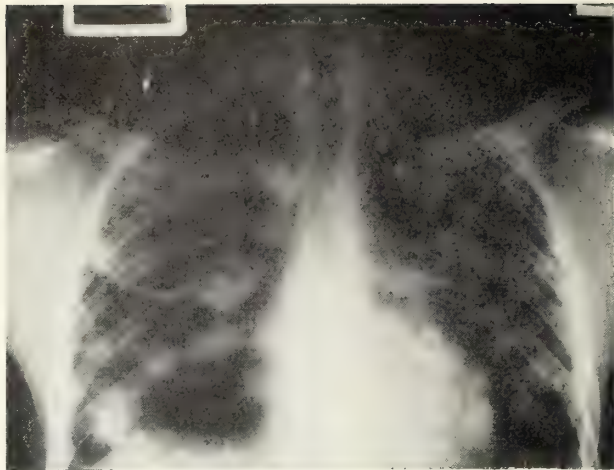


Figure 3
After two months of prednisone therapy, 10/15/70, there is marked resolution of infiltration.

YALE-NEW HAVEN HOSPITAL

CARDIOPULMONARY LABORATORY

NAME: 3007 6006121 ADDRESS: DATE: 5-14-69
UNIT NO. DATE: 5-14-69
ACCOMMODATION:

Date of Test		5-14-69		8-18-70		10-28-70		12-7-70		Observed	Predicted
		Observed	Predicted	Observed	Predicted	Observed	Predicted	Observed	Predicted		
Forced Vital Capacity, L		3.996	5.337	2.129	5.337	3.112	5.337	3.654	5.337		
Forced Expiratory Volume	0.5 sec.	58.8	60.6	72.9	60.6	59.0	60.6	70.7	60.6		
	1.0 sec.	87.7	83.1	91.6	83.1	89.2	83.1	91.4	83.1		
	3.0 sec.	100		100		100		99.3			
Max. Expiratory Flow Rate, L/sec.		6.25	9.1	4.3	9.1	4.34	9.1	6.28	9.1		
Max. Mid-Exp Flow Rate, L/sec.		3.99	5.4	2.62	5.4	3.43	5.4	4.87	5.4		
Max. Voluntary Ventilation, L/min.		183.0	190.3	94.3	190.3	106.4	190.3	130.9	190.3		
Tidal Volume (VT), L		1.724				.679					
Minute Volume, L/min.		11.2				9.02					
Expir. Reserve Volume, L		1.220	1.308	.576	1.308	.985	1.308	1.136	1.308		
Functional Residual Capacity, L		2.353	2.811	1.650	2.811	3.076	2.811				
Residual Volume, L		1.133	1.503	1.074	1.503	2.091	1.503				
Total Lung Capacity, L		5.125	6.840	3.203	6.840	5.203	6.840				
RV/TLC ratio, %		22	22	33.5	22	40	22				
Pulmonary Gas Distribution	% N ₂ at 4 min.	0.9	2.5								
	7 min.	0.6	2.0	0.4	2.0	1.1	2.0				
Alveolar PO ₂ (calcul.), mm Hg		103.8	103								
Arterial PO ₂ , mm Hg		75	90								
Arterial O ₂ Saturation, %		94.3	96								
Arterial PCO ₂ , mm Hg		40	40								
End-tidal PCO ₂ , mm Hg		37.8	38								
Arterial pH		7.38	7.40								
Alveolar Ventilation, L/min.		4.44									
Dead Space, (VD) L	Physiol.	4.37									
	Alveolar	.017									
	Anatomic	.420									
VD (physiol.)/VT ratio, %		60	30								
Diffusing Capacity (CO), ml/min./mm Hg		20.6	17			12.4	17				
Compliance of Lungs, L/cm H ₂ O											
Airway Resistance, cm H ₂ O/L/sec.											
Arterial pO ₂ (100% O ₂)		590									

INTERPRETATION 12/7/70

Compared to study of 10/28/70 there has been further improvement of FVC & MVV.

Figure 4

Details of pulmonary function testing reveals changes that parallel the X-ray changes noted above.

OBITUARIES

Simon Meleck, M.D.
1915-1971

Dr. Simon Meleck died suddenly and unexpectedly at the age of 55 while on a visit to his native England on April 9, 1971.

Born in London, England September 26, 1915, he received his premedical training at the University of London and was graduated with a medical degree from the London Hospital Medical College



in 1940. After a rotating internship at the London Hospital, he served for five years during World War II as a medical officer in the Royal Navy two years of which were spent at sea on the notoriously hazardous North Sea patrol.

Following the war, he resumed his training at the The London Hospital and then at the Prince of Wales Hospital and St. Peter's Hospital in London where he took four years of specialty training in Surgery and Urology. For the next eight years he was in the private practice of medicine in Cornwall in the south of England.

In 1957, he and his family came to the United States and Dr. Meleck practiced for a short while in Petersburg, Virginia before settling in New Britain, Conn. where he practiced general and industrial medicine for ten years. In 1968, he joined the staff of St. Francis Hospital in Hartford as an assistant visiting physician in the Department of Ambulatory Services.

Dr. Meleck was a well trained, experienced and meticulously competent physician whose dedication to medicine was coupled with a hearty and warmly reassuring manner. His gift for relating to his fellow man and his superbly developed sense of humor made working with him a pleasure and his loss all the more tragic. This warm and inspirational human being was a valued friend to both colleagues and patients. He will be sorely missed.

Stephen A. Hulme, M.D.

Seymour Leonard Lustman, M.D.
1920-1971

Dr. Seymour Leonard Lustman was born in Chicago, Ill. in 1920 and died through accidental drowning on Aug. 5th, 1971. He was educated in Chicago, received a Bachelors degree from Northwestern Univ. in 1941 and a Doctoral degree in Clinical Psychology from the Univ. of Chicago in 1949. Subsequently he went to medical school and



became an M.D. in 1954, at the University of Illinois. From 1942 to 1946 Dr. Lustman served in the Army, achieving the rank of captain. He interned at the University of Illinois Research and Educational Hospitals, and then in 1955 came to Yale as a Commonwealth Fund Fellow, to begin his psychiatric residency. He became a clinical fel-

low in child psychiatry in 1957 and remained at Yale University. He was certified by the American Board of Psychiatry and Neurology in 1962 and by the Board of Child Psychiatry in 1963. In the same year he was also certified as a child analyst, having previously graduated from the Western New England Institute of Psychoanalysis in 1961. From 1958 until his death he was Associate Professor and then Professor of Psychiatry at the Yale Child Study Center.

Besides the Connecticut State Medical Society, he belonged to the professional societies commensurate with his title and accomplishments. He was a member of Alpha Omega Alpha and Sigma Xi and received the Chandler and David Rappaport Prizes.

These topical data are the scaffold around which Sy Lustman had built a brilliant and rich career; he was a superb teacher, an effective therapist and concerned mentor of youth. The last gift came to flourish particularly during 1969-70 when he was Acting Master of Davenport College, and just before his death he had assumed the Mastership of that college, a role to which he looked forward with great enthusiasm and to which he brought superb ability and distinction.

Besides his family, his students both in the college and in the medical school have suffered an irretrievable loss as have his patients and colleagues. In addition to serving on the faculty of the School of Medicine and the Western New England Institute of Psychoanalysis, he also served on some eighteen committees and boards, half of them of national scope such as the Joint Commission of Mental Health of Children, the Manpower Commission of the American Psychiatric Association and as Secretary of the Board of Professional Standards of the American Psychoanalytic Association. He also was on several editorial boards and was editor of the *Psychoanalytic Study of the Child*, an annual volume containing the most prestigious essays and articles in that field. At the time of his death he had completed a two year term as President of the Western New England Psychoanalytic Society.

Our deepest sympathy goes to his wife, Katharine, the valued Director of the Nursery School at the Child Study Center; son Jeffrey, a medical student at Yale, and daughter Susan (Mrs. Jonathan Katz), of New Orleans, his mother, Mrs. Anna Lustman and his sister, Mrs. Mildred Marcu. But all of us—colleagues, friends, students and patients—have suffered the loss of a man who lived life well and had not yet reached the zenith of his career.

Stephen Fleck, M.D.

In Memoriam

Calvin, Claudius Virgil, Harvard Medical School, 1916. Dr. Calvin was a pediatrician in the Fairfield area since 1916. He was a first lieutenant in the Medical corps, World War I, and practiced in the Bridgeport area until 1957 when he retired as chief of the pediatrics staff at Bridgeport Hospital. Dr. Calvin then became medical director of the Rehabilitation center of Bridgeport for six years. He was a fellow of the American Academy of Pediatrics, a member of the Connecticut State Medical Society, and the American Medical Association. Dr. Calvin died August 25, 1971, at the age of 85.

Dorion, Robinson H., University of Vermont, 1932. Dr. Dorion was a general practitioner in the Fairfield area since 1934. During World II he was a medical officer in the U.S. Navy. He was a member of the Connecticut State Medical Society and the American Medical Association. A member of the Board of Trustees and past president of the Stamford-Darien Unit of the American Cancer Society, Dr. Dorion had also served as president of the medical staff of Stamford Hospital. Dr. Dorion died August 7, 1971, at the age of 63.

Haswell, Ralph W., University of Rochester, 1947. Dr. Haswell specialized in occupational medicine in the Middlesex area since 1958. He was a member of the Connecticut State Medical Society and the American Medical Association. Dr. Haswell died June 15, 1971, at the age of 50.

Tiny Holes Ease Task Of Reshaping Nose

JAMA: 212, 2035, June 22, 1970) Dr. Frank Rubin has devised an instrument for punching holes in nasal cartilage. The holes leave the cartilage pliable for recasting into the desired shape. He termed the instrument "morselizer" and he has used it on hundreds of patients with septum deformity since 1966. The holes produced change the collagenous structure, the cartilage's architecture, so it follows a new blueprint and its old "memory".

Enough holes are made to move the cartilage freely. The whole procedure takes only a short time and can be extended to ear and even trachea to close up tracheal stomas.—L.H.N.

Letter To The Editor

Members of the Society are invited to communicate with the Editor of CONNECTICUT MEDICINE expressing their opinions or giving information as to any matter of interest to the members. The Editorial Board reserves to itself the right to select the communications or excerpts therefrom that will be published and to reject others. As with other material which is submitted for publication, all correspondence will be subject to the usual editing and possible abridgment. Material should be typewritten double spaced, and be of reasonable length (not over 1½-2 pages). Address all correspondence to: THE EDITOR, CONNECTICUT MEDICINE, 160 St. Ronan Street, New Haven, Connecticut 06511.

Dear Dr. Nahum:

We are currently attempting to establish a Zoster Immunoglobulin Program for the state of Connecticut at the University of Connecticut Medical School. The background and aims of our Zoster Immunoglobulin Program are as follows.

Varicella (chickenpox), is generally considered one of the least serious infectious diseases of childhood, but may represent a lifethreatening infection for patients with leukemia or patients receiving corticosteroids or other immunosuppressants. Even large doses of gammaglobulin can only modify and not prevent this infection. However, Dr. Philip Brunell of New York University has recently demonstrated that Zoster Immunoglobulin, an antibody concentrate prepared from the convalescent plasma of patients with herpes zoster, (shingles), can *prevent* varicella in these high risk patients.

We are currently seeking patients with shingles to serve as donors of zoster immune plasma. If any physician should have a patient with herpes zoster in his practice, we would like him to inform the patient of our need for his plasma and contact us at the University of Connecticut Health Center—McCook Division, Telephone 243-2531 ext. 351. The optimal time for plasma donation is 8 to 21 days after the onset of the rash. If the patient is willing to donate, and meets the standards of the American Red Cross for blood product donation, 500ml of plasma would then be drawn by plasmaphoresis at the Red Cross in Hartford.

After a significant amount of immune plasma is collected, high risk patients will then be registered. Their varicella history and antibody titre will be recorded at the Medical School in order to provide these patients with ready access to Zoster Immunoglobulin or immune plasma.

This program is also designed to provide useful information concerning the epidemiology of herpes zoster infections and the varicella status of leukemics in the state.

Thank you very much.

Sincerely yours,

John G. Gittzus

3rd Year Medical Student

Robert M. Greenstein, M.D.

Assistant Professor

Department of Pediatrics

The University of Connecticut

Health Center, Hartford, Conn.

Meeting Notices

The information on this "notices" page is offered as a service of all specialty groups and allied health agencies in order to publicize postgraduate educational opportunities available to subscribers. The deadline for publication in Connecticut Medicine is the tenth of the month preceding, date of issue. Send copy to: Connecticut State Medical Society, 160 St. Ronan Street, New Haven, Connecticut 06511.

GENERAL

April 25-27, 1972—Tuesday-Thursday

180th Annual Meeting of the

Connecticut State Medical Society

Theme: Clinical Pharmacology

Hartford Hilton, Hartford

September 7, 1971-May 23, 1972

Lecture Series—Each Tuesday

Basic Sciences as Related to Clinical Medicine:

Infectious Diseases, Coronary Care Problems,

Diagnosis and Treatment of Tumors

Lawrence and Memorial Hospitals

New London, Connecticut

Contact: Edward Gipstein, M.D.

October 21—Thursday

20th Annual Scientific Symposium

Connecticut Academy of General Practice,

Hartford Hilton, Hartford

Contact: Frank F. Northman, M.D.,

Bridgeport (333-1092)

October 25-29—Monday-Friday

"The Hospital Medical Staff Conference"

Cape Cod, Massachusetts

Contact: Local hospital administrator

December 9—Thursday
Statewide Conference on Cancer of the Colon
Yale University School of Medicine,
Harkness Auditorium.

OPHTHALMOLOGY

October 29—Friday 9 a.m.-9:30 p.m.
6th Joint Clinical Meeting
Subject: Glaucoma
Yale-New Haven Medical Center
Sponsored by CSMS Section on Ophthalmology
and the Department of Ophthalmology of the
Yale University School of Medicine.

OTOLARYNGOLOGY

October 23-29—Saturday-Friday
Annual Otolaryngologic Assembly of 1971
University of Illinois Hospital Eye and
Ear Infirmary, Chicago
Contact: Otolaryngology, P.O. Box 6998,
Chicago, Illinois 60680

PEDIATRICS

November 10—Wednesday
Annual Pediatric Symposium
"The Newborn with Jaundice"
Lawrence M. Gartner, M.D.,
Albert Einstein College of Medicine,
New York City
St. Francis Hospital, Hartford, Connecticut
Contact: William E. Hart, M.D.,
Director of Pediatrics

PSYCHIATRY

Lecture Series: Connecticut Valley Hospital,
Middletown
October 26—Tuesday 10:30 a.m.
"Where Has The Idealism of Youth Gone?"
Dana L. Farnsworth, M.D.

SURGERY

January 27, 1972—Thursday
Annual Meeting of the Connecticut Chapter of the
American College of Surgeons
Park Plaza Hotel, New Haven
February 4-5, 1972—Friday-Saturday
Symposium on Problems of the Female Breast as
Related to Neoplasms and Reconstruction
Memorial Sloan-Kettering Cancer Center,
New York City.

AMERICAN COLLEGE OF PHYSICIANS

November 1-5—Monday-Friday
Respiratory Pathophysiology
McGill University—Montreal, Canada
November 3-5—Wednesday-Friday
Current Concepts of Clinical Infectious Diseases
University of Virginia—Charlottesville
November 15-17—Monday-Wednesday
Clinical Gastroenterology for the Internist
Lahey Clinic Foundation—Boston
November 17-19—Wednesday-Friday
Solving Problems in Clinical Hematology
University of Alabama—Birmingham
November 17-19—Wednesday-Friday
Rehabilitation and the Internists
Mayo Clinic, Rochester, Minnesota

Family Practice Examination

The American Board of Family Practice announces that it will give its next examination for certification in various centers throughout the United States. The examination will be over a two-day period on April 29-30, 1972. Information regarding the examination can be obtained by writing:

Nicholas J. Pisacano, M.D., Secretary
American Board of Family Practice, Inc.
University of Kentucky Medical Center
Annex #2, Room 229
Lexington, Kentucky 40506

PLEASE NOTE: Deadline for receiving completed applications in the Board office is February 1, 1972.

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Science News

Histidine Shows Value in Rheumatoid Arthritis

(Geriatrics: 26, 32, June 1971) The symptoms of rheumatoid arthritis can apparently be relieved successfully with large doses of histidine. Dr. D. H. Gerber treated 70 rheumatoid arthritis patients with daily oral doses of L-histidine for periods averaging nine months, after it was found that such patients had histidine levels 28 percent less than in healthy persons.

He noted significant improvement in three standard measures of therapy, strength of hand grip, walking speed, and the erythrocyte sedimentation rate. One great advantage of the therapy is the complete lack of adverse side effects, he said.

The full evaluation of the therapy will require large-scale double blind experiments.—L.H.N.

Nursing Home Association Denounces Medicare

The American Nursing Home Association has denounced the medicare program as a "hoax" perpetrated on the elderly. It has urged its more than 7,000 members across the country to reassess their current participation on medicare. Vital health care has been denied the elderly by the government the ANHA declared.

David R. Mosher, the President of ANHA, said that the Association provided the major share of 340,000 beds certified for extended care facilities to achieve "a less costly alternative to hospital inpatient services" as intended by Congress. Yet less than 5 percent of these beds are utilized maintaining that this is due to unfair and unreasonable restrictive controls imposed by authorities.—L.H.N.

Carbon Monoxide Pollution In The Atmosphere Increases Mortality

(*Science*, 172, 265, 1971, *Hechter, H. H. and Goldsmith, J. R.*) They point out that acute CO poisoning claims more than 1,000 lives each year in this country. Exposure to lower concentrations on the order of 50 ppm may result in temporary impairment of judgement and motor performance.

The authors point to another paper by Goldsmith of a possible effect of exposure to community CO on case fatality rates for myocardial infarction.

In this paper they report a significant correlation between the community CO concentration and mortality for Los Angeles County. Cyclic variation and maximum temperatures were the main contributors. No association was demonstrated between oxidants and mortality.—L.H.N.

Coronary Artery Surgery; Saphenous Vein Bypass

(*Am. Hl. Jr.* 82: 137, July 1971, Burch, George E.) Surgical procedures are introduced to improve the health of man, not to injure him. Saphenous vein grafts for coronary arterial diseases have an operative mortality rate of about 10 percent if only one vessel is bypassed, a morbidity rate of 25 percent or more (pulmonary embolism, pericarditis, pneumonia, pleuritis, hemorrhage, myocardial infarction, cardiac causalgia and many other complications and disturbances in health), associated pain and suffering in 100 percent and a cost of \$3000-6000 or more to the patient.

The grafts do not cure the coronary arterial disease, about 25 percent of the shunts close within 2 years and the surgical procedure has never been subjected to any control studies such as sham operation or "double-blind" evaluation.

Imagine any capable cardiologist prescribing a pill that had never been subjected to double-blind control studies, that might kill 1 out of 10 patients, hurt 25 percent, produce pain and suffering in 100 percent and cost \$3,000, \$6,000 to the patient and never cure him!

Not only would the cardiologist not prescribe such a pill but also the FDA would not allow the pill to reach the market and the public.

—L.H.N.

The "Control Of Tuberculosis" Up-To-Date

(*New Eng. Jr. Med.* 284: 1380, June 17, 1971, Mitchell, R.)

(1) Ethambutol is given in 15 mg per kg has largely replaced paraaminosalicylic acid. Visual toxicity (loss of acuity, fields or color sense) not only is rare on the recommended dose but usually subsides promptly after the drug is discontinued.

(2) Many observers do not stop INH for INH-related SGOT elevations except in the presence of some other manifestations of liver dysfunction. INH liver toxicity is extremely rare.

(3) The careless and uncooperative patient is managed by administration by nurses or other personnel to outpatients on a twice-weekly or even daily basis.

(4) Treatment of *Kansasii* and to a lesser extent Battey-type mycobacterioses has proved increasingly effective. Treatment consists of 4-6 different drugs chosen on the basis of their relative in vitro resistance tests.

(5) Rifampin, a new drug, still very expensive, appears to be virtually as effective as INH and even more promising; it has virtually no toxicity. It is thought it may replace streptomycin in primary treatment before long.—L.H.N.

Vitamin D. Metabolism: The Role of Kidney Tissue

(*Science*, 172: 1232, June 18, 1971, Gray, R., et al.) Impaired renal function has for several years been known to be associated with alterations in Vitamin D. metabolism. Calcium is not easily absorbed in chronically uremic rats and this is probably origin of renal rickets.

Gray showed that a metabolite of Vitamin D. produced by renal homogenates is identical with that needed by the intestine in vivo for absorption of calcium.

This suggests that in azotemic chronic renal disease there is a failure to produce the intestinal metabolically active form of Vitamin D., thus resulting in impaired calcium absorption.—L.H.N.

Lithium In Water Could Lower Rate Of Heart Disease

(*JAMA* 214, 1789, December 7, 1970) Dr. H. W. Voors reported to the American Public Health Association in Houston that adding more lithium to water supplies could lower the incidence of coronary heart disease (CHD).

He studied the finished municipal water supplies of 99 major American cities for their concentration of lithium ions in relation to age adjusted mortality rate.

He concluded that low lithium concentrations are statistically associated with the incidence of CHD in both sexes and suggested adding lithium to water supplies that are low in it.—L.H.N.

Therapy Of Impetigo And Furunculosis

(*JAMA* 214, 1862, December 7, 1970, Fritsch, W. C.) The patient with impetigo runs a significant risk of acquiring acute glomerulonephritis. His risk of having a drug reaction to an appropriate orally administered antibiotic is quite low. The author prefers erythromycin 500 mg every six hours for adults, for ten days.

For simple furunculosis the author administers topical antibiotics. In recurrent furunculosis a systemic antibiotic is usually effective. Vaccines and toxoids have never proved effective.

Bacterial interference may some day find widespread application for both staphylococcal carrier states and recurrent furunculosis.—L.H.N.

Experiments In Cancer

(*JAMA*: 214, 37, October 5, 1970) Dr. R. O. Brady has reported to the American Cancer Society in Chicago that the composition of glycolipids concentrated in the cell membrane changes markedly after mouse cells were transformed by viruses. There occurs a "specific block" of an enzyme-catalyzed step in ganglioside synthesis in both the SV-40 and polyoma virus transformed cells.

The mechanism causing the disappearance of enzyme is not known but the cell membrane lacking the ganglioside no longer has the surface properties of a normal cell—contact inhibition is lost. Rarely when some of the virus transformed cells spontaneously revert to normal the aminosugar transferase was expressed again, the ganglioside pattern reverted to normal and the surface recovered its contact inhibition.

The problem then is what can be done about the enzyme deficiency. One method is to attempt to add it to cancerous cells and render them normal once again. The author is trying to purify the enzyme with just this purpose in mind.—L.H.N.

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Intestinal Enterokinase

(Hadorn, B., Steiner, N., Sumida, C. *Lancet* 165, January 23, 1971). Intestinal enterokinase or enteropeptidase converts pancreatic trypsinogen into active trypsin and thus indicates protein digestion in the small intestine.

This enzyme is bound to the surface of the small intestinal epithelial cell. Evidence suggests that enterokinase is released from its site at the membrane of the intestinal cell by the action of bile acids and occurs thereafter in a soluble form in the small intestinal juice. This solubilization is associated with a significant increase in the enzymatic activity of enterokinase.—L.H.N.

Rifampin

(*JAMA*: 214, 1055, November 9, 1970, Devine, L. F., et al) Rifampin in 4 daily 600-mg doses reduced percentage of meningococcal carriers by 80% compared with controls. It was well tolerated. At 6.5 hours after a fourth 600-mg dose, the levels in saliva samples extended above and below the minimal inhibitory concentration of rifampin for the reference strains.

Thus the efficacy of rifampin in the eradication of the meningococcal carrier state has been established. It should prove safe and effective in carriers of sulfadiazine-resistant meningococci under limited conditions.—L.H.N.

Brain Weight Increases Resulting From Environmental Enrichment: A Directional Dominance in Mice

(*Science*, 169, 776, August 21, 1970, Henderson, Norman D.) A genetic analysis of brain weights of 544 mice reared in either enriched or standard environments indicates significant directional dominance in the percentage of increase in brain weight as a result of enrichment.

The parents brain weights averaged 405 mg. Hybrids reared in standard cages averaged 423 mg, their counterparts reared in an enriched environment had an average brain weight of 445 mg. The four-way crosses reared in standard cages averaged 430 mg brain weight while their counterparts reared in an enriched environment averaged 448 mg brain weight.

These studies appear to have some relevance to rearing human infants in an enriched environment. They also will probably develop larger brain sizes.—L.H.N.

Adrenal Gland in Tissue Culture

(*Nature*, 227, 619, Aug. 8, 1970). Dr. Manuelides of Yale has been able to grow embryo adrenals from 14 day mouse embryos. In this invitro model chromaffin cells without sympathetic innervations or physiological stress even in the embryonic state had the ultrastructural characteristic of secretion denoted in the in vivo preparations.

It is still unclear which of two processes "exocytosis" or internal degranulation with chemical diffusion is responsible for the release of hormones in these cells.—L.H.N.

PRELIMINARY ANNOUNCEMENT

180TH ANNUAL MEETING

CONNECTICUT STATE

MEDICAL SOCIETY

APRIL 25, 26, 27, 1972

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BOOK REVIEWS

GRANTS CLINICAL ELECTROCARDIOGRAPHY. *Second Edition revised by Julian R. Beckwith. McGraw-Hill Book Company. 1970. 225 pp. 95 Figures. \$9.95.*

Reviewed by: LOUIS H. NAHUM

Recognizing the complexity of the heart anatomy and the fact that the predominant source of surface potentials are derived from the surface layers of the heart: it is understandable that the author wishes to treat the vector from an unorthodox point of view. However, he is carried away and in the body of the book it is the "vector" which causes the electrocardiogram and not the "vector" is derived from the electrocardiogram. Then in Figure 37: ECG changes in acute pericarditis he states "early in acute pericarditis an abnormal ST segment elevation is present because of an ST vector pointing toward the center of the pericardial surface of the left ventricle. This is certainly not an explanation, in fact, it is misleading because the ST segment deviations are due to an injury in the surface of the heart.

If the author would not confuse the reader with such non-explanations, the reader would find beautiful drawings of the various patterns in electrocardiography. As we get towards ventricular conduction defects the "vector" seems somehow to grow weak and even disappear without injuring the patterns.

What is missing is what we do know about anatomical and physiologic explanations for electrocardiography. For example, the electrocardiogram of severe pulmonary emphysema is described as having "initial forces verticalized inferiorly and terminal forces verticalized superiorly but why this is so is not presented.

It is hard to know what a student would get out of this little volume except perhaps to dislike the confusion by the "vector" and on the positive side learn to analyze the QRS complex in its initial and terminal patterns. For the contributions of various parts of the heart, to individual leads an understanding of the mechanism of the arrhythmias he will have to look elsewhere.

At the end are topical references, first books, the latest one being by Freedman in 1963. There are references to twenty articles, the latest of which is 1963. Missing is the original paper by Nahum, Hamilton and Hoff on the injury current in the *American Journal of Physiology*.

HANDBOOK OF PSYCHIATRY. *Philip Solomon and Vernon D. Patch. 2nd Edition. Lange Medical Publications, Los Altos, California, 1971. 648 pp. \$7.50.*

Reviewed by: LOUIS H. NAHUM

This paperback is written by 34 authors and consists of 4 parts: psychiatric background, psychiatric illness, psychiatric treatment and special psychiatric fields. It is a handbook which means it should be important for reader consultation when psychiatric problems arise. It should be a storehouse of information of current practical importance and it should serve the student as a source of carefully organized knowledge with emphasis on practice rather than theory. It should aid the physician who faces a psychiatric problem and wishes to review relevant material in the field, it should be small, factual, compact and reasonably devoid

of speculative or controversial data. In all these items, this handbook is a complete success.

Every physician actually practices psychiatry to some extent in his bedside manner, in his dealing with his patient as a person. This book talks to the physician in clear language from which most of the jargon has been removed and offers him the kind of information and advice that he can and should use in his practice. It will help the student to immediately apply the information in a clinical case and in preparations for an examination.

The philosophy in its preparation is as follows: Psychiatry is a branch of medical science. While clinical psychiatry is more of an art than a science, it is striving toward being a science. Like other branches of medicine it has benefited from many kinds of human activity, including all the basic medical sciences using imagination, speculation, missionary zeal, evangelism, but by none so much as the scientific investigators.

This book, however, is built around a core of accumulated knowledge about mental illness and its treatment. Background data in Section I special field of psychiatry is described in Section IV. There is information about lithium. The uselessly augmented number of phenothiazines are properly omitted. References of historical and classical value refer the reader to interesting work.

The book emphasizes that psychiatry is firmly rooted in neurology, internal medicine, psychology, sociology, genetics, epidemiology and history. Forensic psychiatry is in Chapter 37 and medicolegal matters in Chapter 4. Genetics of psychiatry is in Chapter 8. One can see from an overview of the book that the most serious unknown lie in the field of etiology, heredity, infections, endocrine pathology and dynamic psychotherapy.

Psychodynamic theory is of considerable value in understanding the treatment of neuroses, personality problems and behavioral disorders, of some value in the management of psychosomatic conditions and of little value for the psychoses and for predictive validity anywhere. This is found in Chapter 31.

The book touches only upon certain contemporary events with psychiatric implications such as current wars, nation problems such as air pollution, the draft, racial tension, crime in the streets, decay of cities, youth protests, incipient unrest and rebellion everywhere.

Chapter 6 is unique in presenting differential diagnosis of symptoms and signs. It makes the first attempt to show the logical foundation on how to proceed from symptoms and signs to a likely diagnosis. It should lead to a computerized system.

Chapter 11 is a unique attempt to give the reader an understanding of what he should and can know about the value of the data in the articles he reads. Chapter 20 is devoted to management of the chronic alcoholic patient. Finally, is the psychiatric emergency routine of inestimable value to everyone in medicine.

This book is a bargain. Every physician and student should have it available. They will use it almost daily and with benefit.

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TEAMWORK FOR WORLD HEALTH. Edited by Gordon Wolstenholme and Maeve O'Connor. J and A Churchill, Publishers, 104 Gloucester Place, London 1971. 234 pp L300

Reviewed by: VICTOR L. SZANTON

This volume is one of papers presented at a symposium held in Istanbul sponsored by the Ciba Foundation. The papers focus time after time on the plight of the rural community. World wide, except for the well-developed countries, 80% of the physicians dwell and practice in the urban areas which contain 20% of the population. The remaining 20% of the physicians, "out in the boondocks", have imposed upon them the medical care of the remaining 80% of the population.

There have been few successful attempts made to properly service rural populations. Here there are at least two papers presented which are noteworthy. The first of these is a report by M. Dadgar and G. Szroukhanian of Iran that offers a solution as applied to that country. The Medical Corps of the Iranian Army is assigned to service rural areas with all the necessary equipment, working from local medical centers with mobile health units. A turnover of medical personnel occurs every two to three years when the Army medic's individual tour of duty is either terminated or he is transferred, and a new team assigned. From the viewpoint of continuing with the same doctors rendering medical care this is far from ideal but this is an excellent example of the social uses of military medical resources. This schema of the Iranian government is a great step forward.

The second note-worthy report comes from communist China. Now that Chinese ping-pong athletes are acceptable it may also be modish to talk of matters in communist Chinese medical practice. In this instance the Chinese government has aroused the interest of young men in their early twenties, having the equivalent of a high-school education and who are farm workers, to enter health service careers to serve their native communities. After the crops are safely in the granaries these young men are brought into the clinic centers and are immediately introduced to clinical medicine for a period of five months. The approach is that of the time-honored preceptorship. Upon seeing a severe laceration, for instance, the young student assists in the care necessary and then is stimulated to study the anatomy involved in the injured area, the physiology of trauma, bleeding and infection, and so is given an immediate grasp of a current situation. After five months the young man returns to his rural community where he is permitted to do, under supervision, such small tasks as are within his ken. Their targets are not set too high. At least once a week a member of the mobile medical team would visit the peasant doctor's village and see, with him, all who need a consultation. Within the next three years each student doctor is called back for repeated four-month periods of additional exposure. At the end of this time he may qualify to become a recognized peasant physician in a rural area, acquainted with its basic problems and with the requirements of his people. They work in the countryside because they belong there. They are not separated from the peasants they serve because they, themselves, remain peasants.

In discussing this approach the lecturer does not indicate for how long the plan has been in effect. These young doctors will remain in their own rural communities. One of our eminent newspapers has deprecatingly described them as

"barefoot doctors". If the plan proves to be workable, then one must admit that communist China is superior to us in rendering rural medical service as well as in ping-pong.

This text is recommended reading in regard to the reports on the Iranian and Chinese sectors, for those interested in the perplexities of providing medical care to our rural populations. Although the last papers dwindle off to a stew of executive language and managerial gibberish, the earlier paper, are good ones. The poor distribution of medical care is world-wide and needs emphasis and attention.

PRINCIPLES AND TECHNIQUES OF CARDIAC PACING. Seymour Furman, M.D. and Doris J. W. Escher, M.D. With a chapter by Byron Parker. With 284 illustrations. Medical Department, Harper & Row, Publishers, New York, 1970. 269 pp. \$12.50.

Reviewed by: LOUIS H. NAHUM

This book provides an overall view of the field as it existed last year and serves as a practical guide to the utilization of temporary and permanent pacing. It is based on experience gained from 306 implants in which asynchronous demand, atrial synchronous and ventricular synchronous pacemakers modes were employed.

Transvenous pacing was found to have a selective low operative mortality. One patient in the group died of it. However, there were 4 electrode fractures and 11 perforations of the ventricle. The pacemaker still need a longer period before replacement than at present which is 24-30 months.

Two patients died with competitive rhythm and 9 with asynchronous pacemakers. There were 13 sudden deaths that they believe began spontaneously and independent of any pacemaker rhythm, 25 deaths in all, or over 8 percent.

The book is scholarly, with a good historical introduction. It is didactic and easily read. It contains a critical review of available equipment. It presents clearly the authors' indications for application of pacing and a discussion of the physical engineering, cardiac surgery, and cardiology required for knowledgeable and efficient use of temporary or permanent pacing.

It will be of particular interest to the cardiologist or cardiac surgeon concerned with the decisions to pace, its implementation and consequences and to the physician charged with the care of a patient who is a cardiac, wears a pacemaker and must be followed with relevant judgment and concern. It should also serve the house officer, cardiovascular and coronary care nurse and biomedical engineer who seek a background on the art and techniques of cardiac pacing.

It is richly illustrated with chest films and electrocardiograms that are clear.

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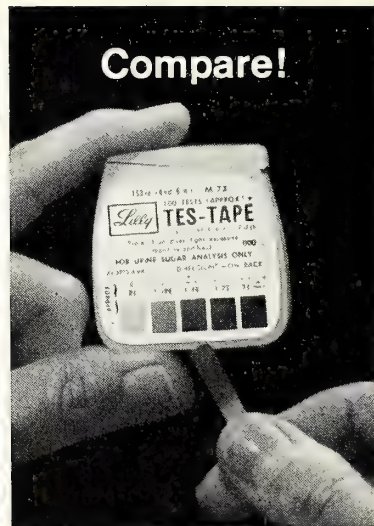
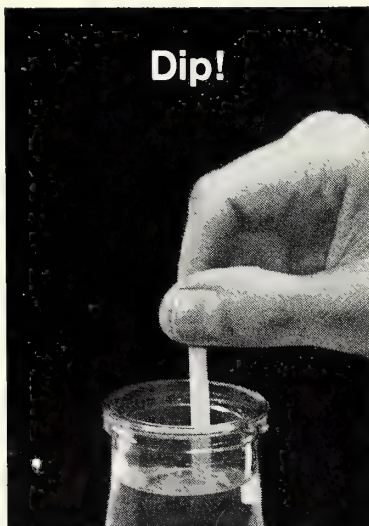
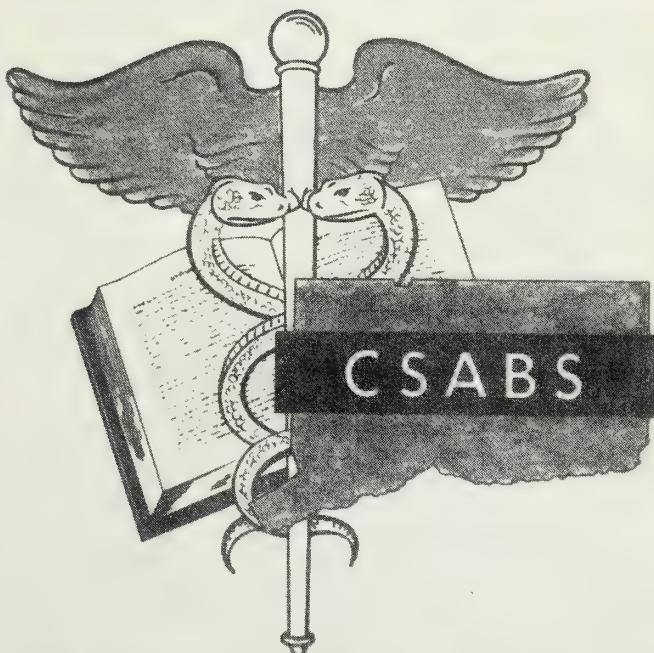
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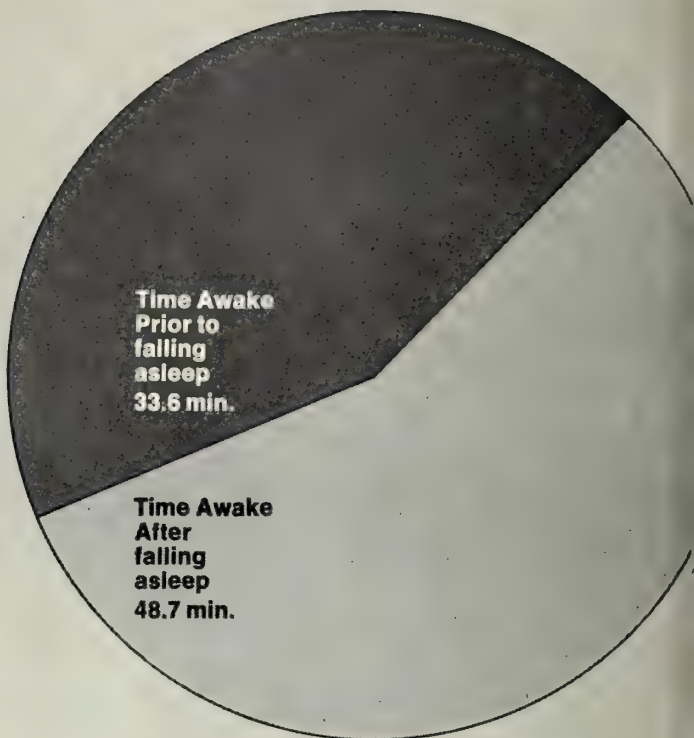
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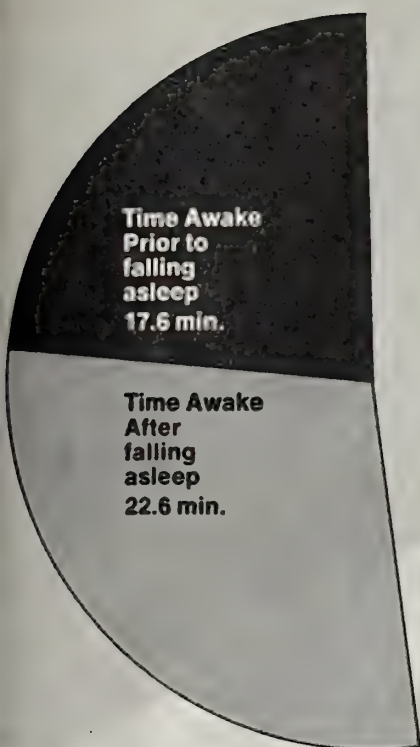
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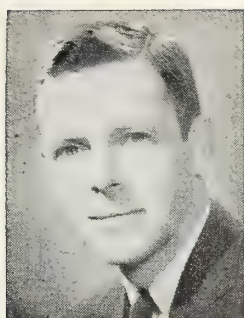
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PRESIDENT'S PAGE



The Leadership Conference presented by the Connecticut State Medical Society on September 30, 1971, was pronounced a great success by all who attended. In the morning session the Committee on Peer Review Organizations, Foundations, and Health Maintenance Organizations presented speakers and discussion on these topics, and the afternoon session on "The Waning Prestige of the Physician in Today's Politico-legislative Climate" was presented by the Committee on Public Affairs. The committees responsible and the staff of CSMS are to be congratulated on the planning, choice of speakers, and general arrangements which had so much to do with providing a fine educational experience for the invited Society members.

Included in the conference was a talk by the CSMS legislative counsel, Mr. Raymond C. Lyddy. He gave the audience an opportunity to hear a candid, polite, and forthright summary of what legislators think of doctors—and why. We have much to learn by considering dispassionately how we are appraised. Our legislative counsel said that legislators are not always convinced that the doctor's approach is altruistic. This seems shocking on first being heard. It must be especially upsetting to members of the Committee on State Legislation who expend great effort to sponsor bills, and in support of those of others which are carefully studied to see that they are in the best interests of the patient and the public health. It is hard for doctors who practice preventive medicine successfully to accept a charge of selfish interest in legislative matters. We must correct that impression. Many politicians have been heard to speak ill of "Medicine" as an organization, but when questioned, immediately hedge by saying they have the highest respect for and confidence in their own personal physician. This would seem to be the tack for us to take to break down the distrust focused on the medical profession as a whole. The legislator must be contacted personally, shown what problems doctors face, what they want to do about them and why. This can be done on a friendly basis with the initial contact by the personal physician backed up by the local town or county society. The men running the government are responsible persons and will serve themselves and medicine better if they have the proper background. This point of personal contact was brought out by Dr. George Roch and the members of his committee at the conference.

Senator Stanley J. Pac, Chairman of the legislature's Public Health and Safety Committee, was the final speaker of the workshop. His committee hears most bills related to medical subjects. He stated unequivocally that, in the view of many legislators, doctors have lost their former aura as dedicated personal physicians. He attributed this to poor press, poor public relations, and evidence of financial success. His talk was not on the negative side, however. He encouraged doctors to get involved in the process of speaking out publicly on bills related to their profession. This could most easily be done at the local level where they are respected and know their district representatives. He indicated the doctors would receive a welcome hearing because, at this level, they could work with friends.

Senator Pac further stated that a physician would be an asset to the State legislature in any capacity. There are many functions that such a person could perform. There is an existing organization to teach him the techniques of state administration and steer him through the maze of political maneuvering that bills follow in their course from inception to enactment. To fulfill the demands of such a position would require a doctor's full time during a legislative session. It would be an interesting diversion for a retired physician. More than a service to medicine, he would provide a welcome source of information to the legislative body in their current concern with health-oriented legislation.

Until such time as we can persuade someone to do this job for us, it will have to fall on individual shoulders. We must take a personal interest in health legislation and form a personal relationship with a local representative or senator. We must talk over health matters with him so as to create real understanding of what we are striving for, and learn the practical and political methods involved in attaining our objectives.

Frederick C. Weber, Jr., M.D.
President

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Frank A. Oski, M.D.
Associate Professor of Pediatrics,
University of Pennsylvania
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SUBJECT— Current Concepts of Conception,
Pregnancy and the Neonatal Period.

SEMINAR – FEBRUARY 12 - FEBRUARY 26, 1972

SPEAKERS— Elliot L. Sagall, M.D., Clinical In-
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of Law, Instructor in Legal Medicine
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Foreword

This is the third year in which papers from the Annual Winter Scientific Meeting of the Connecticut Society of American Board Surgeons have been published in *Connecticut Medicine*. These papers, presented on December 9, 1970, are superbly representative of the caliber of clinical surgery in Connecticut. Thanks to the assistance of Dr. James Foster of Hartford, we are again able to include most of the discussion stimulated by these presentations, and discussions were particularly meaty. The Society was delighted to hear the presentation by one of its California transplants, Dr. James Mark, now Professor of Surgery at Stanford University.

When I consider the scope of the material presented in this group of papers, I am deeply impressed by its timeliness, its representation of surgical frontiers, its focus on problem areas, and, above all, its critical dedication to the clinical care of patients.

The Society is most appreciative of the cooperation of *Connecticut Medicine* in making this publication possible.

It is a distinct pleasure to serve as guest editor of this issue.

Gerald O. Strauch, M.D., *Guest Editor*

Missed Carcinoma of the Lung

James B. D. Mark, M.D.

Introduction

Since 1954, cancer of the lung has been the leading cause of death from cancer in the United States. Of 315,000 deaths from cancer in this country in 1968, 55,000 were due to lung cancer, more than one in six cancer deaths. Investigations of the etiology, epidemiology, biological characteristics, natural history and treatment of lung cancer are legion. While there can be no doubt that some lung cancers are incurable when first detectable, and others which have been shown to be present over long periods of time are curable, there can be little argument that the earlier each individual lung cancer is detected, the better its chances of eradication. Clearly the best answer to the "lung cancer problem" would be the prevention of the disease, an optimistic but probably unattainable state of affairs. Better methods of detection and treatment are also being investigated. Until major advances are made in these areas, we as physicians must appreciate and treat each lung cancer as early as possible using presently available means. Patient delay is unfortunate. Doctor delay is reprehensible.

During the past five and one-half years, eleven patients with lung cancer in whom the diagnosis was missed or its recognition delayed have come to our attention. During this same period of time 319 patients with lung cancer have been hospitalized at the Santa Clara Valley Medical Center. Some of the misses in this series were by men in practice, some by house officers, some by specialists and some by generalists. The heroes of most of these stories were interns. In their innocence interns tend to ask questions and want answers. Because they have little experience, they have less confidence than their elders and are less apt to outthink themselves.

The various reasons for lack of detection and delay are seen in Table I. On most occasions, those patients treated with a presumptive diagnosis had undergone multiple diagnostic procedures including bronchoscopy, sputum examinations for acid

fast bacilli, fungi and malignant cells, scalene node biopsy and needle aspiration of the lesion itself, all without a diagnosis being established.

The following case summaries serve to illustrate the most important and most preventable reasons for delay in diagnosis of carcinoma of the lung as seen in the entire group of eleven patients.

Case Reports

V.T. SCVMC #20-05-80. This forty-two old woman was a chronic alcoholic and a smoker of one package of cigarettes daily for 25 years. She was first seen in March, 1965, for a routine check-up. A chest film revealed a strand-like lesion in the right upper lobe. No diagnostic or therapeutic measures were instituted. In January, 1966, the lesion had increased in size and density (Fig. 1). Intermediate strength PPD was positive and sputum examinations were negative for acid fast bacilli. Treatment was begun with INH, PAS, and streptomycin with the presumptive diagnosis of tuberculosis. By January, 1967, the right upper lobe density had increased further in size (Fig. 2), and tetracycline was added to the therapeutic regimen. A month later there was no change in the X-ray appearance. In March, 1967, thoracic surgical consultation was obtained. Bronchoscopy revealed a thickening at the trifurcation of the right upper lobe bronchus. Scalene node biopsy was negative. Histoplasmin and coccidioidin skin tests were negative. Sputum cytology was negative on three occasions, as was the bronchoscopic cytology. Right upper lobectomy was performed on March 20, 1967. Extrapleural dissection over the apex was necessary because of extension of the lesion to the parietal pleura. Histologic examination revealed this to be a poorly differentiated adenocarcinoma. Post-operatively she was treated with 6,600 roentgens of X-ray therapy to the right upper chest. The patient expired in July, 1968, presumably of cancer. No post-mortem examination was performed.

Although this lesion was not impressive when first seen on X-ray examination, there should not have been such a long delay until further investigation was carried out. Clearly a positive tuberculin skin test is not enough evidence

TABLE I
REASONS FOR DELAY IN 11 PATIENTS WITH MISSED
CARCINOMA OF THE LUNG

MISSED CARCINOMA OF THE LUNG	
Reason for Delay	
Treatment with presumptive diagnosis	6
Tuberculosis	4
Abscess	1
Chronic bronchitis	1
X-ray miss	2
Tuberculosis and carcinoma	2
Unexplained watching	1

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to establish the diagnosis of pulmonary tuberculosis in such a lesion. Meyer, Scatliff, and Lindskog have shown a higher correlation of positive PPD than of cigarette smoking with lung cancer.⁴ A negative sputum cytology is certainly insufficient grounds on which to eliminate lung cancer as a diagnostic possibility. In large series, only 50 to 60 percent of patients with lung cancer have a positive sputum cytology. Bronchoscopy was carried out only later in the course of the disease. It appears that the physicians taking care of her could not believe that a young female might be the victim of carcinoma of the lung. A two-year delay resulted. This delay certainly could have led to her demise.

R.A. SCVMC #16-93-61. This seventy-one year old man,

a heavy smoker all his life, was first seen in June, 1969, because of intermittent claudication. Chest film showed a "Large infiltrative area in the left apex with a central lucency resembling a cavitary lesion. Impression: Lesion, left upper lobe posteriorly, most likely tuberculosis" (Fig. 3). Sputum cytology was negative on six occasions. Sputum examinations for acid-fast bacilli were negative on thirteen occasions. Histoplasmin and coccidioidin skin tests were negative. An in-

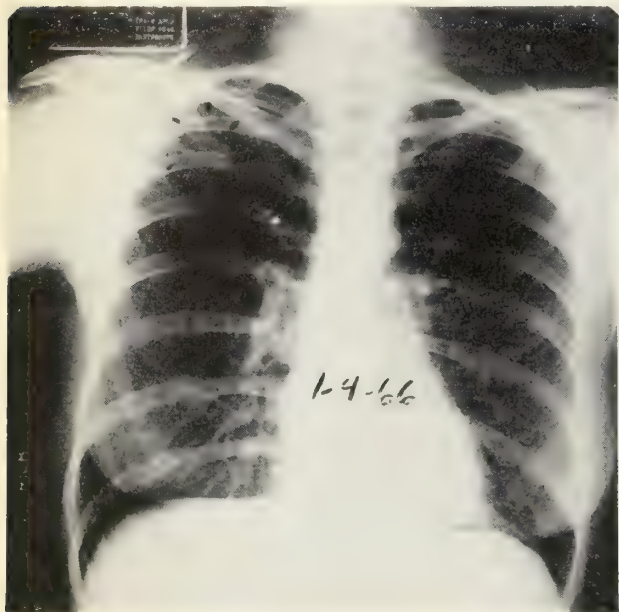


Figure 1
Patient V.P. Definite lesion beneath anterior 2nd rib.

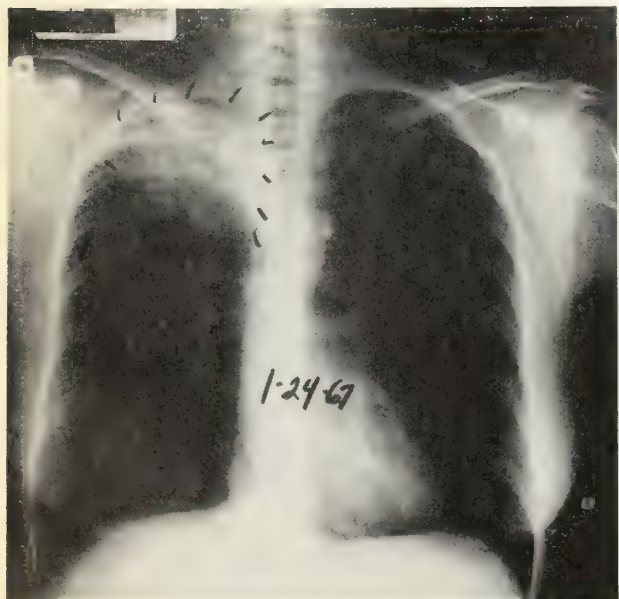


Figure 2
Patient V.P. One year later lesion is much larger and denser.

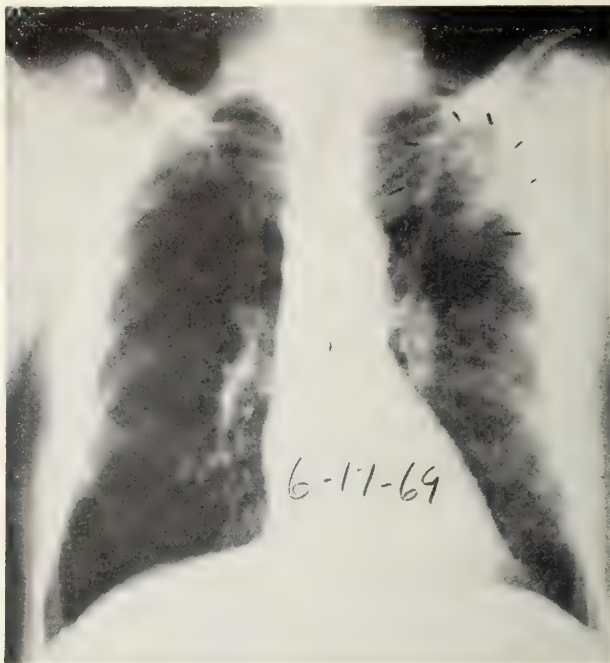


Figure 3
Patient R. A. Cavitary lesion, left apex.

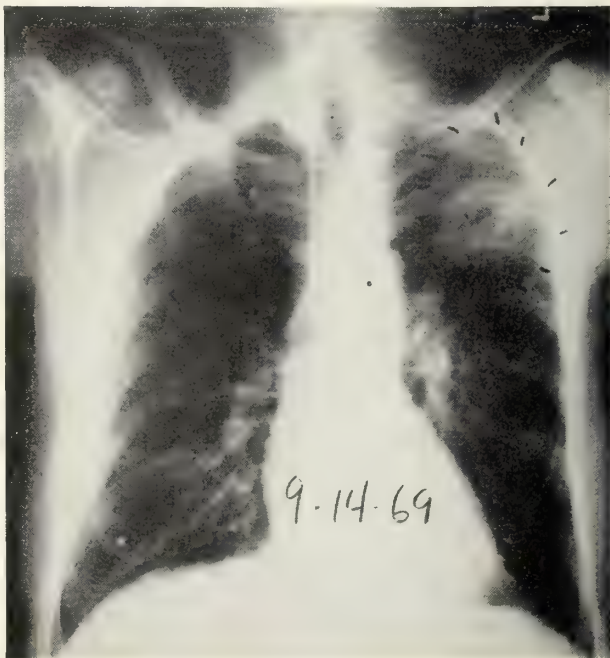


Figure 4
Patient R.A. Three months later lesion is almost solid in appearance.

intermediate strength PPD was positive. It was decided to treat this patient with a presumptive diagnosis of pulmonary tuberculosis. INH, PAS and streptomycin were begun. By August the cavitory lesion seen on X-ray seemed to be filling in. In September no change was noted by X-ray (Fig. 4), and the decision was made to pursue further diagnostic studies.

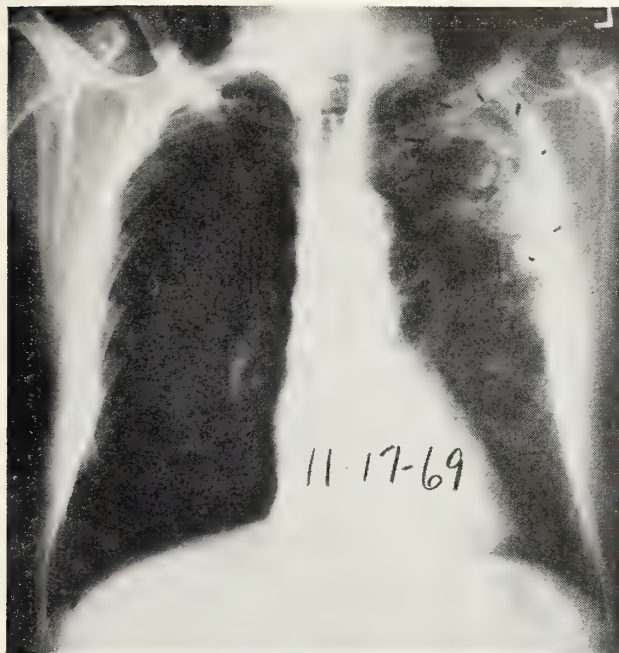


Figure 5

Patient R.A. After 2 more months lesion is cavitory with moderately thick walls.

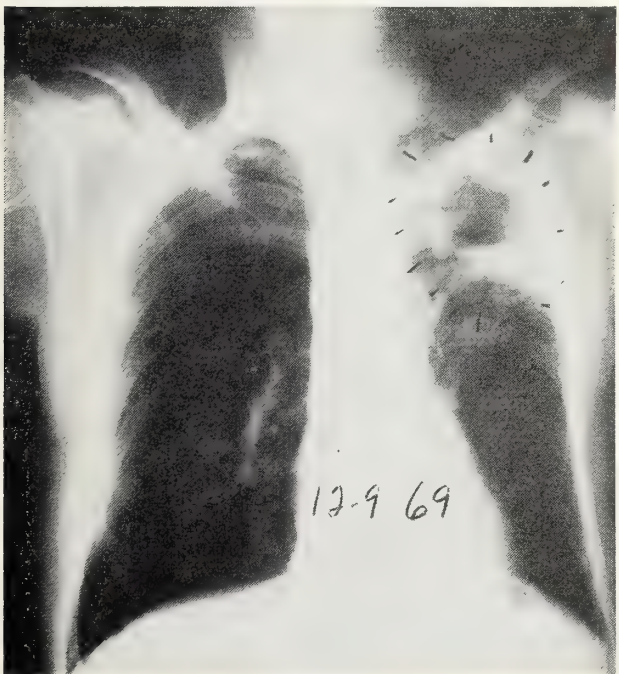


Figure 6

Patient R.A. The following month (6 months after original detection) walls are thicker and umbilication is present at 1 o'clock.

On September 26, 1969, a percutaneous needle aspiration of the pulmonary lesion was performed. A note in the chart on that date stated: "Abundant material for culture and cytology. Serosanguinous material aspirated with many flecks of whitish tissue. Four cc saline wash of lesion also performed." Studies on this material were negative for cancer and the patient was discharged from this hospital. In November, 1969, the patient was seen in the emergency room with left chest pain, cough and a history of intermittent hemoptysis. X-ray report at that time states: "Since previous exam there has been a spread of the infection in the anterior and lingular segments of the left upper lobe. There are also several areas of cavitation in the posterior segment. Tuberculosis must be given first consideration" (Fig. 5). Because the patient was febrile at this time treatment with tetracycline was instituted. Sputum cytology was negative on three occasions. By December the cavity was four centimeters in diameter, and pleural thickening had increased (Fig. 6). At this point a thoracic surgical consultation was requested. Bronchoscopy revealed mucosal friability in the left upper lobe but no endobronchial lesion was seen. On December 22, 1969, a left pneumonectomy was performed. The left upper lobe lesion was approximately five centimeters in diameter, extended across the long fissure and involved the chest wall. Hilar and superior mediastinal nodes were involved with cancer. Histologic examination revealed a large cell undifferentiated carcinoma with pleural extension and 10 of 16 lymph nodes positive for cancer.

The six month delay may very well have necessitated the performance of a pneumonectomy rather than a lobectomy in this patient exposing him to a significantly increased operative risk and decreased respiratory reserve. Paulson⁵ notes a five-year survival of patients with bronchogenic carcinoma amenable to lobectomy twice that of patients in whom pneumonectomy is required. Bernhard¹ has pointed out the frequency with which bronchogenic carcinoma presents as a "lung abscess."

J McN. SCVMC #21-58-59. This man was sixty-six years



Figure 7

Patient J. McN. Two small lesions in right upper lung field are circled.

of age when first seen in January 1966, for a check-up. He had smoked one and a half to two packages of cigarettes daily for many years. A sister and brother had died of tuberculosis. A chest X-ray at that time revealed "a small density in the right upper lobe without definite calcification." Further investigation of this lesion was not pursued. He was hospitalized for a urinary tract problem in March, 1966, at which time no further mention was made of the pulmonary lesion. In January, 1967, two small right upper lobe nodules were seen (Fig. 7) Tomograms revealed "calcification within two nodules in the anterior segment of the right upper lobe suggesting tuberculoma." In November, 1967, the patient complained of abdominal pain and a seven pound weight loss was noted. An upper GI series revealed a duodenal ulcer which was treated conservatively. During the next two years he was seen on multiple occasions because of hypertension, orchitis and a corneal laceration. No further mention was made of the pulmonary lesion. In December, 1969, the patient was seen in the emergency room because he had had a chest cold for five days with a nonproductive cough. Chest film at that time revealed a definite right upper lobe mass (Fig. 8). He was then seen in thoracic surgical consultation and hospitalized in January, 1970. Tomography again showed calcification within the lesion (Fig. 9) Sputum cytology was negative on six occasions. Intermediate strength PPD was positive. Histoplasmin and coccidioidin skin tests were negative. Bronchoscopy and scalene node biopsy were both negative. Needle aspiration of the lesion was carried out. Cytologic examination of the needle aspirate was negative for malignancy. The needle aspiration was repeated one week later. Cytology on this occasion revealed a cellular pattern consistent with carcinoma. Right upper lobectomy was carried out on January 23, 1970. The lesion proved to be a large-cell undifferentiated carcinoma with venous invasion. The patient was well when last seen in November, 1970.

Again a multiplicity of negative studies does not add up

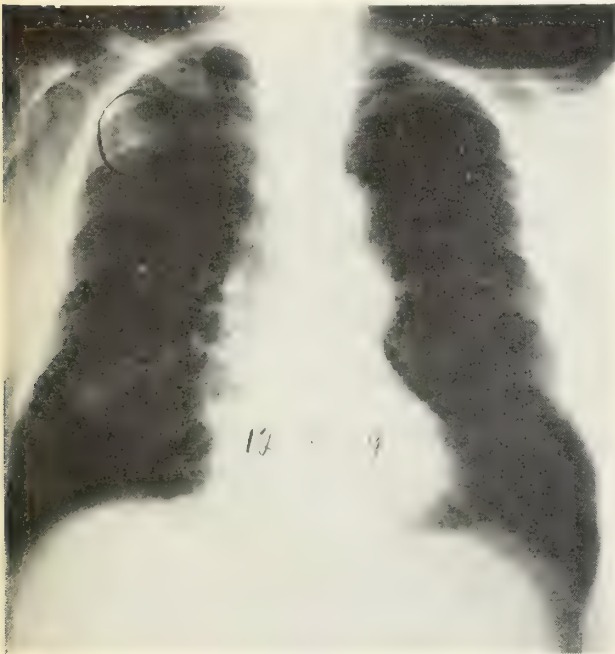


Figure 8

Patient J. McN. Single right upper lobe mass in December, 1969.

to a positive diagnosis. Calcification seen in the lesion on tomography in January, 1967, was misleading. It should not have been. Davis² has shown that flecks of calcium are not uncommon in lung cancer. This patient's lesion was present for four years prior to definitive treatment and had enlarged considerably during this period. Jackman³ and Steele⁷ have demonstrated a decreasing survival rate with increasing size of pulmonary nodules.

Discussion

All patients with carcinoma of the lung do not come to the attention of a physician while the cancer is amenable to surgical resection, the best therapeutic modality presently available. When a patient with a pulmonary lesion comes under the care of a physician—any physician—it is that physician's responsibility to see that the lesion is diagnosed with certainty and treated promptly. It is inconceivable that a solitary breast mass or a colon lesion would remain undiagnosed for long or would be treated on the basis of a presumptive diagnosis. To paraphrase that eminent philosopher, Darrell Royal, when you watch a lung lesion, only three things can happen and two of them are bad.

For a pulmonary lesion, solid or cavitary, in which the investigative studies fail to establish the diagnosis of benign disease, exploratory thora-

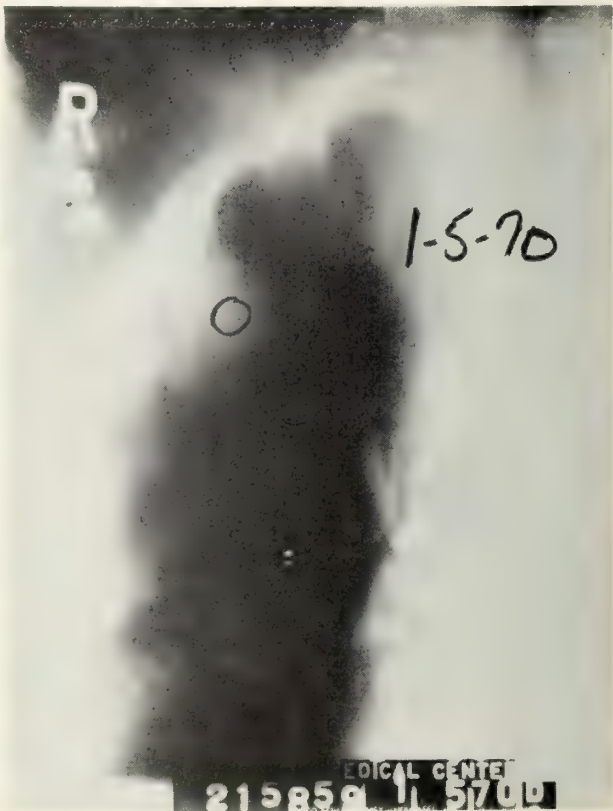


Figure 9

Patient J. McN. Tomograms in January, 1970 show eccentric, stippled calcification in single right upper lobe lesion.

cotomy is in order. While lobectomy for diagnosis may sometimes be necessary for the deeply placed lesion, it is usually possible to do an incisional or excisional biopsy (wedge resection) of the lesion. Plested⁶ has shown that such a biopsy of a lung cancer does not adversely affect survival. If the lesion is shown by frozen section to be malignant, appropriate resectional therapy, usually lobectomy, can be performed. If the lesion is benign, local excision may well suffice. Even if lobectomy has been performed for a benign lesion, the patient is many better served than if the lesion had been merely observed.

Summary

Eleven patients with carcinoma of the lung in whom the diagnosis was missed or its recognition delayed have come to our attention over a five and a half year period. The most common error has been the treatment or observation of an undiagnosed pulmonary lesion presuming that it is benign. The lesson to be learned is that all pulmonary lesions must be diagnosed with certainty, by thoracotomy if necessary, in order that lung cancer can be treated in an optimal fashion.

Addendum: Since submission of this manuscript, six additional patients with missed carcinoma of the lung have come to the attention of the author.

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Discussion of Dr. Mark's Paper

Dr. Allan L. Toole, New Haven: I appreciate the opportunity of discussing this paper and to continue the crusade against the minifilm and photoroentgens which are out of at least some hospitals in the State. I do have three photoroentgens which I blew up for you to demonstrate perhaps something that we can do specifically for carcinoma of the lung: to outlaw these small films or at least the people that do read them under adverse conditions. I think the problem is that the patients are symptomatic which they go for their films, and when they get a report that their X-ray are normal, they delay in following up their symptomatology.

The first patient was just a gross miss, and what we usually do in our office is show the film to our secretaries and if they can pick up the lesion, then we save the film for future reference.

The second case is a girl who had hemoptysis and did have a cardiac lesion by her film which was typical mitral stenosis. Her film was reported as normal, and she delayed for two years until she had another episode of hemoptysis. She had a definite coin lesion on the original film, and this turned out to be a bronchoalveolar cell carcinoma originating in a scar which I am sure had been there for two years.

The third patient is, I think, a serious one from a therapeutic standpoint because she had present then a complete atelectasis of her left lung. In her history she insisted that she had a wheeze which had been present for seven years. When she first noted the wheeze, she went to get a photoroentgen and her film was reported as normal, so she lived with her wheeze until suddenly her wheeze disappeared, and she came into the hospital with atelectasis of her entire left lung. We biopsied her three times, and Dr. Liebow on three occasions interpreted this as an oat cell carcinoma. We are presently primarily treating these with X-ray therapy, but because of her history, we insisted on looking for her old photoroentgens and finally did get it. It demonstrated an atelectasis of her left lower lobe. So on the basis of this we did explore her, and we found a carcinoid tumor of the lung. This is the gross miss. This patient presented with acute dyspnea, and this turned out to be a small cell undifferentiated carcinoma which was inoperable. This was the photoroentgen which was reported as normal.

This is the patient with obvious mitral stenosis, and she has a definite coin lesion here which measured almost 2cms. This was taken two years before

she presented and had a right upper lobectomy for broncho-alveolar cell carcinoma.

This is the lady with the carcinoid. Here was her presenting X-ray, and I think this represents herniation of her right lung into her left chest with complete collapse of her left lung. After coring this out by bronchoscopy, this was her X-ray, which we interpret as atelectasis of her left lower lobe, and despite the reports of the histology of her bron-

choscopy, we did get her photoroentgen which is on the next slide and demonstrates again the atelectasis of her left lower lobe at that time. If she had been picked up at this time with her carcinoid, she very probably would have ended up with just a lobectomy.

I congratulate Dr. Mark for his long trip and appreciate his talk.

Dermatofibrosarcoma Protuberans

A Review of Twelve Cases

Harry J. Tamoney, Jr., M.D.

An infrequent but not rare tumor arising from fibroblasts of the skin is appropriately named Dermatofibrosarcoma Protuberans. Such a proper title was designated by Hoffman¹ in 1925. Credit for its identification and first description has been attributed to Darrier and Ferrand.² They named it a progressive and recurrent dermatofibroma in 1924. Numerous other appellations have been used since, such as Fibrosarcoma of the Skin (Stout,³ Mopper⁴), Hypertrophic Morphea (Sherwell⁵), Storiform Fibrous Xanthomas (O'Brien and Stout⁶), Storiform Neurofibroma of Skin (Bednar⁷), Sarcomatoid Fibroma of Skin (McMaster⁸). As far back as 1890 Taylor⁹ undoubtedly made reference in his description of sarcomatous tumors resembling, in some respects, keloid. Although a variety of titles is found in medical literature, few changes in its histological or clinical behavior have been described.

In early reports considerable attention was paid to its origin. Kuznitsky and Grabisch¹⁰ in 1921 postulated the tumor arose in mammary ridges. This concept was later supported by Binkley¹¹ in 1939. In addition, Binkley¹¹ in his report of six cases suggested that the tumor was most easily mistaken for a neurofibroma or neurogenic sarcoma. Mosto¹² actually felt that it had a neurogenic origin. Hertzler¹³ in 1926 felt that the tumor was an amelanotic melanoma.

A position that trauma precedes the occurrence of tumor was proposed by Hoffman,¹ as well as

Eller and Eller¹⁴ in 1951. Their theory of origin was further supported by Degas¹⁵ in 1953. In the large series of 115 patients reviewed by Taylor and Helwig¹⁶ only 19 patients gave a history of prior trauma to the site where the lesion developed. The severity of trauma was questionable and its possible significance dubious. Gentile¹⁷ in 1951 described it as a true tumor arising from fibroblasts of the skin. His concept is widely accepted at present.

In 1963 Taylor and Helwig¹⁶ in their classic review of 115 cases from the Armed Forces Institute Of Pathology demonstrated how this tumor can be differentiated histologically from other entities beyond question. A characteristic arrangement of fibroblasts occur around a small vascular space or local area of collagen in such a fashion that a distinct pattern of these tumor cells appears resembling a cartwheel or whirligig. This formation or architectural design was present in every one of their cases. (Fig. 1) It is felt careful search will result in identification in all cases of Dermatofibrosarcoma Protuberans (DMFP). Absence of cartwheel formation in confusing lesions like cellular dermatofibroma or sclerosing hemangiomas is most useful in distinguishing them from this entity. The histological identification has similarly been most beneficial in excluding many low grade fibrosarcomas as well as fibromatoses.

DMFP is considered to be malignant only because of its locally invasive property. Its great proclivity for local recurrence justifies the designation of malignant. Distant metastases can be said not to occur. In 1960 Schiff¹⁸ reviewed the medical

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literature extensively and could not find one case of autopsy-proven metastases. Those few isolated cases of patients reported with metastases are believed not to have had DMFP. A review of their histopathology revealed an absence of the previously mentioned characteristic cartwheel or whirligig pattern. Taylor and Helwig¹⁶ found no incidence of metastases in their series. A possible exception to "prove the rule" may be three of McPeak's¹⁹ series. Cartwheel formation is demonstrable in the histopathology in pulmonary metastases of these patients. He also points out a higher degree of mitotic activity in recurrent tumors that metastasized. He suggests that eight or more mitoses per ten high power fields is an ominous finding. Mitotic figures are rare in the majority of these tumors and most authors are relatively unimpressed. Another exception is that Fisher and Hellstrom²⁰ suggest significance to mitotic activity in their cases portending extreme atavism created by metastasizing DMFP.

Clinical Findings

In reviewing cases described in medical literature, it is noteworthy that there are many instances where diagnosis was not established until appearance of a local recurrence. Examination of clinical

characteristics of the tumor makes multiple different diagnoses of gross disease readily understandable. Errors found in initial histological examinations were in confusion with fibromas, fibrosarcomas, neuromas, neurofibromas, neurofibrosarcomas and fibromatoses as to be expected.

In the 12 cases presented, 10 diagnoses were established on initial histological examination. Two that were misdiagnosed were examined many years prior Taylor and Helwig's¹⁶ published work on the characteristic histological appearance. It is difficult in a retrospective study to ascertain clinical pre-excision diagnosis with maximum accuracy. In only two patients in this series can the diagnosis be documented as to have been suspected clinically prior therapy. Such failure to consider this diagnosis is an extremely important feature and is reflective of the cause for high recurrence rate. If any lesion is regarded lightly by the surgeon then its total extirpation occurs only by chance. Recall of behavior and properties of DMFP makes this thought more realistic. It has an unsuspected infiltrative quality that is not recognizable grossly. In this respect it is similar to benign mixed tumors of the parotid gland as a false capsule is present. This



Figure 1

Low power view shows tumor arising from skin



Figure 1A

High power—revealing the characteristic whirligig pattern and cartwheel formation of DMFP.

deceiving structure is a result of condensation of peripheral tissues around growing and expanding tumor. It does not represent the true margin or limits of tumor. Examination microscopically shows many minute finger like projections of tumor beyond the false capsule. Case 1 emphasizes this dramatically. Any surgery planned only to include the capsular boundaries would fail to extirpate these projections of tumor. No tissue is spared by this infiltrative quality. Penetration into periosteum, bone, fat muscle and fascia is demonstrated in case #4 where a major amputation was needed to control the disease. McPeak¹⁹ reports infiltration even into the brain.

As fibrosarcoma so rarely arises from the skin we neglect it in a differential diagnosis of dermal lesions. In its early stages confusion with a wide variety of skin lesions is readily understandable. It differs from most as it is asymptomatic and therefore only rarely does the patient complain in the early stages.

Classically it first appears as a single nodule in the subcutaneous tissue. There is a discoloration in the overlying skin giving a pink or violaceous color. The nodule is fixed to skin but is freely moveable on deeper structures. Taylor and Helwig¹⁶ describe discoloration of skin to be present prior to appearance of any nodule in 50% of their cases. The nodule grows slowly and enlarges asymptotically. It also may remain quiescent for a considerable length of time, which accounts for the long duration prior to therapy that is reported. In our series, duration varied from less than one year to over fifteen years. Taylor and Helwig¹⁶ report a duration of thirty three years. In one of Hoffmann's¹ patients it was fifty years. One of Darrier's² had a forty two year duration from onset to diagnosis.

After a considerable period of time other nodules appear in adjacent tissue and the tumor is no longer limited to the confines of the skin. Appearance is then more verrugated and exophytic. Rate

of growth of tumor usually increases at this later stage. Nodules appear more frequently and many begin to coalesce. They become subject to trauma and injury, and often ulceration or bleeding will stimulate the patient to seek medical advice and assistance. The patient has had his tumor a long time by this stage. As the disease maybe seen anywhere along its course in a variety of sizes and shapes, failure for clinical recognition even by the most sedulous clinicians is justifiable. Failure of histological identification of initial biopsy or excisional specimen has become much less common. Most pathologists are now in agreement of the necessity of having the cartwheel, stellate pattern or whirligig arrangement present to guarantee the diagnosis. The pattern is much easier to identify in primary lesions than in recurrences.

Location of these tumors has not been predominantly along mammary ridges as postulated by Binkley.¹¹ It has been described on every segment of the cutaneous surface of the body except the palms and soles. There is no specific anatomical pattern of its distribution. The majority are located on the trunk and are less frequently found in the extremities. (Fig. 2)

The male is more apt to be afflicted. Taylor and Helwig's¹⁶ large series of cases report a 4:1 ratio in favor of the male. They do agree male preponderance is likely a reflection of the source of their patients being mostly male than a true ratio. The proclivity for the male is probably just slightly higher than it is for the female. (Fig. 3)

Age at the onset of the disease is most likely in the 2nd or 3rd decades as deduced from studies of duration of tumor. At time of diagnosis, the majority of the patients are over forty years old. Only one patient in the series presented was under forty. Medical literature reports a range from birth to 79 years of age at time of initial treatment.

Case Reports

CASE #1. A.S., a 49 year old male, had a biopsy of a 4 cm. mass in right supraclavicular area in September, 1970. Mass had been present five years. Diagnosis of DMFP established. Patient was admitted and a wide excision performed with primary closure. After discharge permanent sections

	A.F. I.P.	MEM. HOSP.	MAYO C.	S.F.H.
HEAD & NECK	17	8	14	1
TRUNK	47	38	23	7
UPPER EXT.	25	10	12	2
LOWER EXT.	26	22	7	2
	115	78	56	12

Figure 2

	MALE	FEMALE
A.F.I.P.	89	26
MEM. HOSP.	48	34
MAYO C.	32	24
S.F.H.	8	4

Figure 3

of the specimen revealed tumor up to the line of resection. Patient was re-admitted and a wider resection and closure by split-thickness skin graft was accomplished.

CASE #2. J.M., a 74 year old male, was admitted in July of 1970 for treatment of a 9 cm. x 7 cm. mass of left anterior thigh. Mass had been present ten months. Diagnosis of DMFP was made, and a wide excision with split-thickness skin graft replacement was accomplished.

CASE #3. M.C., a 39 year old male, had biopsy of a mass over left hip in April of 1970. Tumor had been present one year. Two weeks prior biopsy it had ruptured and a bloody drainage occurred. Diagnosis of DMFP was established and patient admitted. A wide resection of a 5 cm x 7 cm. elevated ulcerative draining mass was accomplished with a split-thickness skin graft replacement.

CASE #4. M.S., a 70 year old female, had an excision of a 4 cm. mass in her right labia in 1939. This had been present for one year and was diagnosed as a benign fibroma. She had a resection of a recurrence in September of 1968 with a primary closure. Both specimens were reviewed and identified as DMFP. In May of 1969 a wide resection of a third recurrence was performed. A biopsy of a fourth recurrence was accomplished in August, 1969, and an attempt at local removal was made through a radical groin incisional approach. Extensive involvement of the neurovascular bundle as well as periosteum and bone precluded success. Major amputation was felt to be the only method for possible extirpation of tumor. While this latter decision was considered, she received 3500 r of cobalt radiation. The known radio-resistance was recognizable by no change in size or extent of tumor mass being noticeable. In March, 1970, a right hip disarticulation with subtotal pubic resection preceded by a preliminary laparotomy²¹ was performed. It was felt that the tumor was removed in its entirety by this procedure. (Fig. 4)

CASE #5. S.B., a 68 year old male, was admitted in August, 1969, with a 7 cm. x 6 cm. mass of his left groin. This had been present ten years and doubled in size during the last year. Diagnosis of DMFP established by excision. A wider excision in continuity with a left groin dissection was performed. No recurrence has been noted.

CASE #6. E.H., a 50 year old female, was admitted in October, 1968, with a fifteen year history of being aware

of nodules of her lower abdomen. (Fig. 5) A 20 cm. x 10 cm. area was involved. Biopsy was DMFP. A wide excision with a primary closure was accomplished. No recurrence has been noted.

CASE #7. A.L., a 46 year old male, had an excision of a 3 cm. x 2 cm. mass of his right upper back in July of 1968. Mass had been present five years but had recently increased in size. Diagnosis of DMFP was established. Patient was admitted and a wide excision was a split-thickness skin graft replacement performed. No recurrence has been noted.

CASE #8. W.N., a 50 year old male, was admitted in July, 1968, with a three year history of a bluish discoloration of the skin over right iliac crest covering a 4 cm. x 4 cm. mass. Incisional biopsy revealed DMFP. A wide excision with split-thickness skin graft replacement was performed. No recurrence has been noted.

CASE #9. L.P., a 55 year old female, was admitted in May, 1968, with a ten year history of a mass over her right shoulder. Recent rapid growth was noted. A wide excision of a 15 cm. x 14 cm. x 8 cm. mass was performed with a split-thickness skin graft replacement. No recurrence has been noted.

CASE #10. B.D., a 44 year old male, was admitted in October, 1966, with a two year history of a mass in the right groin. A "neurofibroma" had been removed from this site in 1958. A wide excision of a 4 cm. x 3 cm. mass with primary closure was accomplished. Tumor was identified as a DMFP and is considered a recurrence of tumor first excised in 1958. No further recurrence has been noted.

CASE #11. I.W., a 42 year old female, was admitted to the Gynecological Service in September, 1968. Examination revealed an asymptomatic 3 cm. mass of her upper back as an incidental finding. Biopsy identified DMFP. A wide excision with a split-thickness skin graft replacement was performed. No recurrence has been noted.

CASE #12. A.F., a 69 year old male, was admitted in November, 1965, with a 5 cm. x 4 cm. mass of the right shoulder. A "neuroma" had been removed from the site eleven months earlier. Wide excision with replacement by a split-thickness skin graft was performed. Diagnosis of DMFP was made. No recurrence has been noted.



Figure 4

Specimen of hip disarticulation and pubic bone. (Case #4) Proper primary treatment will preclude necessity for such mandatory amputations.



Figure 5

Classical finding on abdomen in a 50 year old lady. Present 15 years when nodules began to enlarge and coalesce. (Case #6)

Discussion

DMFP is an accepted true neoplasm arising from fibroblasts of the skin. Its infrequent occurrence, as well as its variety of clinical appearances in numerous sizes and shapes occurring anywhere on the body surface, coupled with its lack symptoms, will continue to make its clinical recognition difficult. Fortunately its histopathology is now recognized. Burkhardt²² states that it should "be possible to make an objective diagnosis in almost every instance without knowledge of the clinical history." Its delay in identification will contribute to delay in biopsy and histologic examination by the pathologist. The striking lack of pain mentioned by Gentile,¹⁷ Binkley,¹¹ and McMaster⁸ is noted in this series.

Wide excision is almost uniformly agreed upon to be the treatment of choice. Betetto²³ is the only author found that favored radiation therapy as the definitive modality of treatment. Case #4 in the presented series mitigates against the use of radiation for curative primary treatment. Surgical excision should be extensive enough in most instances to require a skin graft for replacement. Attention is called to the need for removal of underlying fat, subcutaneous tissue and fascia. To fully compensate for its local infiltrative ability the margin of resection should be at least 3 cm. from the palpable and visible periphery of the tumor mass. Regional lymph node dissection was performed in one case in this series (Case #5). This procedure is not recommended, as the validity of this tumor's ability to metastasize to regional lymph nodes has not been documented. Other instances of regional node dissection in medical literature have been where either there was lack of credence of the histological diagnosis or an erroneous initial diagnosis.

Two resections of the clavicle, one in continuity with part of the scapula, are the only instances of any major extirpative surgery found in medical

literature. The patient presented in this series (Case #4), where an extended hip disarticulation with subtotal resection of the pubic bone was needed for complete extirpation of tumor, stimulated a search in literature in this area. Most of the reports concentrate on clinical history, diagnosis and pathology. Very little is mentioned of types of surgical treatment other than wide excision. This similarly applies to recurrences. It would be informative if the reporting of patients could be carried out for a longer followup period or a final end result be made known. The patient described had her tumor thirty years before such extensive handicapping surgery was necessary.

It is optimistically stated that our present knowledge will preclude such amputative surgery in the future. There is no evidence that this disease is multifocal in origin. Iatrogenic recurrence is a descriptive name which most accurately describes failure of primary treatment today. There should be popular appeal for this title of such growth of residual disease as it reflects a lack of concern or familiarity on the part of the excisor who treats the lesion lightheartedly. It is most satisfying to see cases where the surgeon re-operates immediately after learning the correct histological diagnosis (Case #1). Malignant connotation to DMFP is worthy in spite of controversy over its ability to metastasize as it promotes stimulus for an aggressive initial attack.

Summary

1. The clinical course of twelve patients with histologically proven DMFP are reviewed.
2. Emphasis on its high recurrence rate is made with a plea for prevention of "iatrogenic recurrence."
3. One patient, following four recurrences, required an extended hip disarticulation for complete extirpation of tumor. No similar experience is found in medical literature.

TABLE 1

<i>Sex & Age</i>	<i>Duration of Disease Prior Rx</i>	<i>Rx</i>	<i>Recur.</i>	<i>Survival</i>
1. A.S. 49M Neck	5 Yrs.	Exc. C Graft	0	LI Yr.
2. J.M. 79M Lt. Thigh	LI Yr.	Exc. C Graft	0	LI Yr.
3. M.C. 39M Lt. Hip	1 Yr.	Exc. C Graft	0	LI Yr.
4. M.S. 70F Vulva	31 Yrs.	Excs. & Amp.	4	31 Yrs.
5. S.B. 68M Lt. Groin	10 Yrs.	Exc. & Groin Diss.	0	1 Yr.
6. E.H. 50F Abdomen	15 Yrs.	Exc. C Prim. Cl.	0	2 Yrs.
7. A.L. 46M Back	5 Yrs.	Exc. C Graft	0	2 Yrs.
8. W.N. 50M Abdomen	3 Yrs.	Exc. C Graft	0	2 Yrs.
9. L.P. 55F Rt. Shoulder	10 Yrs.	Exc. C Graft	0	2 Yrs.
10. B.D. 44M Rt. Groin	2 Yrs.	Exc. C Prim. Cl.	1	12 Yrs.
11. I.W. 42F Back	?	Exc. C Graft	0	4 Yrs.
12. A.F. 69M Rt. Shoulder	5 Yrs.	Exc. C Graft	1	4 Yrs.

4. The appellation of DMFP is felt appropriate as it connotes a malignant condition which should stimulate a more aggressive initial surgical attack.

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Discussion of Dr. Tamoney's Paper

Dr. Paul G. Kuehn, Hartford: I hope I don't raise too much controversy by my comments, but when I received the manuscript, I went to our Pathology Department and asked how many of these we have at Hartford Hospital. Our pathologist said that they weren't registered as a malignant tumor. So then I went to our record room, and I looked up our cases and located 17 cases that were predominantly listed under fibromas. And it is very interesting in these 17 cases, which were actually diagnosed later on as dermatofibrosarkoma protuberans after we went over the slides, that most of these were locally recurrent. There were no cases in the series which showed evidence of metastases. Multiple procedures were done—an average of 2.5 procedures per case—and, in relation to sex, it was much more predominant in the male than in the female.

Because this is such a rare tumor, I don't think that very many people have the opportunity of seeing a case like this during their lifetime. I think that Dr. Tamoney is really doing a service to us in collecting these and showing how he has managed these cases at his hospital. There definitely is controversy as to whether this tumor metastasizes or not. I made a few phone calls and talked to a few people, and the general feeling is that if they do metastasize, then we may be talking about something different, but this is a question that the pathologists have to argue about. None of the patients in Dr. Tamoney's series died of the disease, and in the group at our hospital they did not die of the disease either. Also, these cases are extremely difficult to recognize prior to treatment. I am sure many of you see skin lesions which the patient asks you to excise. They have a little bump under the skin surface, and you may tell them to let it go for a while, or if you are an aggressive surgeon, you will say, "We will take it off and have it analyzed." This is the way many of these are diagnosed; they are excised, and then the pathologist comes back and tells you that you have a dermatofibrosarkoma protuberans. My own feeling is that if that diagnosis does come back, then you should go back and do an adequate local excision at that time, and that prompt re-operation is necessary for the proper care of the patient. I think you have to raise the question about overtreating this type of disease because I think we can debate the point just a little bit as to whether we can say this is a malignant disease or not.

I will say also—I think that, in this case of Dr. Tamoney's in which an amputation had to be done, this is all one could do in this situation. The preliminary laparotomy I will not comment about because we are doing these more in the sarcoma group than in his type of tumor, but the idea of doing this procedure to see whether you had extension intra-abdominally probably was very important. I liked his comparison with the parotid benign mixed tumors, because benign tumors which are inadequately removed in a critical anatomical area really can cause the death of the patient.

Dr. William V. Healey, Greenwich: A couple of years ago I went over the fibromatosis cases, before

Dr. Stout died, and I think that what we really need are studies like this to put numbers of cases together where we can classify them properly. While no one institution may have a large number, and you may not think it is worth reporting, if we can get these cases presented and published with the pathology the same, I think that we will eventually wind up knowing what to do for this kind of situation. I think there is a real spectrum in fibrous lesions. The ones that we reviewed were not quite like this, and it is this fine grade of differences, I think, that, as therapists, we should appreciate before we can really give the best care to individual patients.

Aganglionic Megacolon in Adults

Harry C. Briggs, M.D.

Several authors credit Frederick Ruysch, in 1691, as the first man to describe megacolon. He described a 5-year-old girl with an enormous dilation of the colon, but he did not mention the size of the distal segment.¹ Hirschsprung, in 1887, not only described the large colon in an 11-month-old child, but also described the distal constriction. For many years, the dilated segment was suspected as the basis of the pathology. Swenson and others directed their surgical approach to the removal of the constricted distal segment. In the immediate post-World War II period, the appropriate surgical approach was defined. Swenson outlined the abdominoperineal pull-through operation as the procedure of choice for the aganglionic megacolon.² Aganglionic megacolon is usually a pediatric surgical problem. In many large series, the occasional teen-age patient is described. During the last 3 years at the Yale Medical Center, the oldest patient with Hirschsprung's disease was 13 at the time of operation.³ Pickett had personal experience with a 56-year-old man.⁴ When aganglionosis and the resultant megacolon escapes diagnosis during the pediatric age group, usually a short constricted distal segment is involved. Myers and his group have reported a case of a 37-year-old-

man with total colonic aganglionosis.⁵ Their patient underwent a resection of the right colon which resulted in a complete relief of symptoms. However, one year after operation the patient showed marked dilation of the terminal ileum on radiographic studies. A recent personal experience, at Winsted Memorial Hospital, of 2 patients with aganglionic megacolon in adults has prompted this report.

Case Reports

Case 1. R.B., an 18-year-old white male, presented with chronic constipation and minimal fecal soiling in May, 1969.

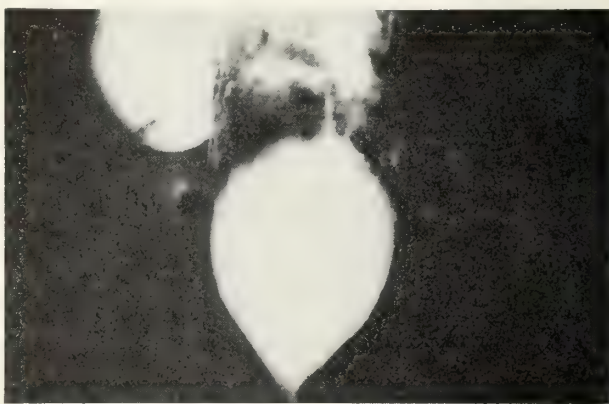


Figure 1

(Case 1) Barium enema showing marked dilatation of colon and the funneled appearance of the distal segment.

DR. HARRY C. BRIGGS, Attending Surgeon, Winsted Memorial Hospital, Winsted, Conn.

At that time, he had recently been medically discharged from the military service. The original impression was that he had an acquired megacolon. Considerable effort failed to satisfactorily evacuate his colon. A rectal biopsy performed

in the spring of 1969 was insufficient to make a diagnosis of aganglionosis. His failure to respond to the usual measures required that a repeat rectal biopsy be obtained. The diagnosis of aganglionosis was confirmed and a two-stage abdominoperineal pull-through procedure of the Swenson



Figure 2

(Case 2) Abdominal film 24 hours after barium enema showing widely dilated proximal descending colon, retention of barium in right colon and a constricted distal segment.

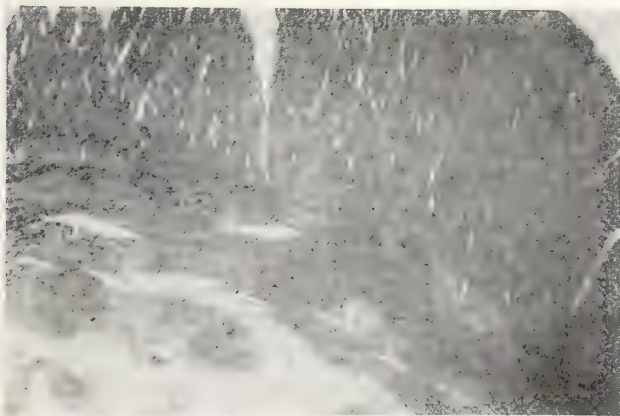


Figure 3

Case 1) Section of proximal colon (low power) demonstrating many ganglion cells.

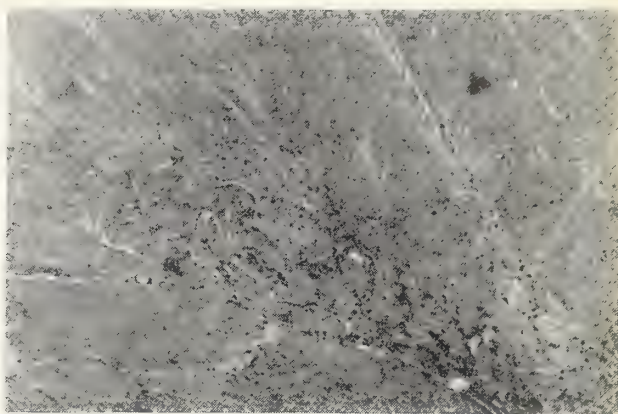


Figure 4

(Case 1) Section of distal end of resected colon, demonstrating aganglionosis and increased number of nerve fibers.

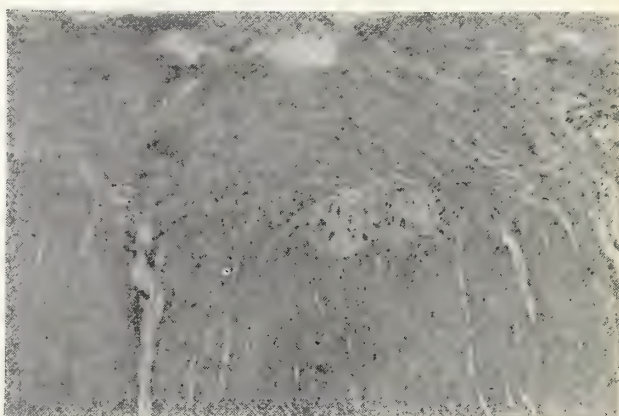


Figure 5

(Case 2) Section of proximal colon (low power) showing many ganglion cells present.

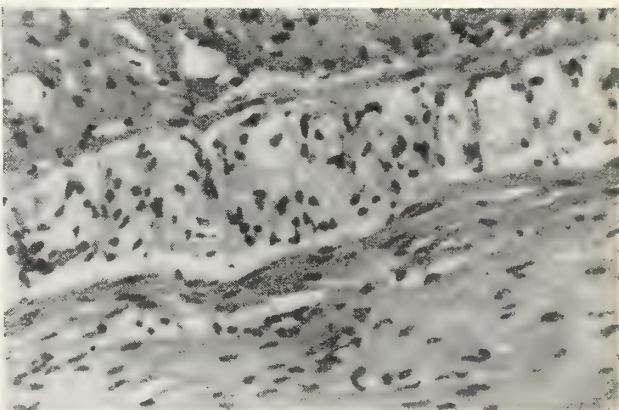


Figure 6

(Case 2) Section of distal end of resected colon demonstrating aganglionosis.

type was performed in the spring of 1970. He had a descending colostomy 5 weeks before the definitive pull-through operation. This patient had a very smooth post-operative recovery and at the present time is having normal bowel movements, with no fecal soiling, and is fulfilling the requirements of marriage.

Case 2. J.Y., a 35-year-old white female, first developed constipation at the age of 12. She always demonstrated a distended abdomen and at age 25 underwent an exploratory laparotomy at which time a segment of dilated colon was resected. Her immediate response to operation was, at that time, satisfactory. However she required cathartics and enemata to control constipation. She again developed abdominal bloating, low abdominal pain and discomfort. An exploratory laparotomy performed in April, 1970, demonstrated a hugely dilated colon with diminished caliber at the level of the rectosigmoid. It was felt that she had a neuromuscular obstruction of the distal colon and a transverse colostomy was performed. She had an excellent response with complete relief of symptoms. A rectal biopsy revealed that hypoganglionosis was present. In May, 1970, she underwent an anterior resection. However, after colonic continuity was established, her preoperative symptoms recurred after 5 months. Re-evaluation indicated that she had persistent neuromuscular obstruction and a colostomy was re-established on December 1, 1970 as the first stage of an abdominoperineal pull-through procedure.

Discussion

The diagnosis of aganglionic megacolon must be established by rectal biopsy. This procedure, in the adult, should be performed only after other causes of constipation have been ruled out. The technique of rectal biopsy is important if a reliable result is to be obtained.⁶ The technique of Swenson is the procedure of choice. General anesthesia is administered and the anal sphincter is widely dilated. The site for the biopsy should be at least 3 centimeters above the muscouteraneous line. A normal hypoganglionic zone has been described in a detailed study by Aldridge and Campbell.⁷ The rectal suction biopsy technique outlined by Noblett is not applicable in the adult patient.⁸ Hofmann and Orestano require that the following points are essential for accurate diagnosis.⁹ The biopsy specimen must include all layers of the bowel; and transverse serial sections are recommended in search for ganglion cells because the ganglion cells are seen more readily than in the longitudinal sections. They feel the optimum site for biopsy is 4 centimeters above the mucouteraneous line in older patients.

The management of megacolon is the removal of the distal aganglionic segment. The absence of ganglion cells is the basis for the functional neuromuscular obstruction. These patients have marked dilatation of the distal descending colon, and the classic bowel preparation cannot sterilize the dis-

tended segment. For this reason, it is recommended that a colostomy through normally innervated colon be performed in the older age patient as the primary stage. The response to colostomy is diagnostic. I feel that the abdominoperineal pull-through procedure as described by Swenson is the most appropriate definitive procedure.

Conclusion

Aganglionic megacolon can present in the post-pediatric age group. This diagnosis should be considered after more common causes of constipation have been excluded.

The diagnosis must be established by a properly performed rectal biopsy.

A diverting colostomy is recommended as the first stage because of the inability to prepare the dilated colon and to facilitate the pelvic dissection at the later definitive procedure.

The abdominoperineal pull-through resection described by Swenson is applicable in adults.

Acknowledgment

The author wishes to express to Dr. Edward Montoni, Dr. W. W. Lindenmuth and Dr. L. K. Pickett his appreciation for their assistance.

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Discussion of Dr. Briggs' Paper

Dr. W. W. Lindenmuth, New Haven: I am reluctant to rise after an academic presentation such as this. Actually it is to be expected; we all know Dr. Briggs, and I do compliment him on a very nice

presentation. I am also reluctant to rise because my experience with Hirschsprung's megacolon in the adult is certainly very small. I have had the privilege of seeing one of the cases that Dr. Briggs presented and also one other case at the V.A. Hospital, but it must be that the incidence of Hirschsprung's or aganglionic megacolon or megarectum (I think colon primarily) is relatively rare. We do see a fair number of patients who are afflicted with constipation with a megacolon of acquired nature, and this is probably not due to aganglionosis, but I understand from my readings that this can indeed develop; and indeed there are some drugs responsible for an aganglionosis, or a functional aganglionosis which is reversible, so that we ought to be aware of the possibility that specific medication might be responsible and withdraw it and then try other than radical surgical means. I think Dr. Briggs pointed out the fact that we must make an accurate diagnosis before we proceed with treatment. I would like to add one thing which I think probably explains a lot of the other megacolon patients that we might see, namely, that there is an abnormal rectal distention sphincter inhibition mechanism. If we inflate the rectum with a balloon gradually, a sensation of an urge of defecate is appreciated by the patient, and at that time there is a very short period of contraction of the sphincter and then a relaxation, an inhibition phase, and this must be present for normal function. If we do not have that, then we can have all kinds of distention proximally. I think in this group of patients we probably have very little to offer except proximal colostomy, because in each instance when that mechanism is not functioning, regardless of which segments we resect, we cannot get adequate function.

I think one other point that might be made in regard to the diagnosis is that there apparently have been patients in which, from a functional standpoint, there is no function, as one would expect in Hirschsprung's but there are ganglia which are not normal. There have been studies to prove that the connecting nerve fibers apparently are not adequate so that even where we see a few, and they are distorted, we may still have a Hirschsprung's megacolon.

Dr. Lawrence K. Pickett, New Haven: The

points that Dr. Briggs brought out are exceedingly important, and I think that the emphasis should be on the fact that these were aganglionic megacolons (I think we can dispense with the term hypoganglionic if our pathological friends could only find one ganglion cell that slipped in by mistake from the previous section). I think that the total absence of ganglion cells, certainly with only one being found, is equivalent, and the resected specimen showed this. The caution I would observe is that when the patient has normal ganglion cells but a megacolon, even of extreme degree, the operative result from resection varies from catastrophic to miserable. The ability to regain normal function when one is dealing with a functional megacolon, rather than an anatomic aganglionosis, is difficult to come by, and one is more impressed with the failures in resections of non-ganglionic disease.

Now we do have this group that Dr. Lindemuth was talking about with hypoganglionosis or functional ganglionosis, though anatomically the ganglion cells are present, and I think the story has not been told yet as to the degree of these present. This is an acquired aganglionosis which we know can occur from ischemia; in prolonged ischemia of the bowel wall, the neural elements are the first to be destroyed by anoxia and you can have a diminution of ganglion cells to a complete absence. Ehrenpreis, Kiesewetter, and a number of others have talked about acquired aganglionosis. This is functionally just as disastrous as total aganglionosis but doesn't respond quite so well to resection. It does respond, in some of the low-lying lesions, to myotomy, internal sphincter myotomy, rather than to resection.

One of the points that Dr. Briggs made was in the adequacy of the rectal biopsy. I think the suction biopsy, taking just the submucosal plexus, is adequate when ganglion cells are present. One need not then do a full thickness biopsy; but if the suction biopsy is negative, then a full thickness biopsy must be entertained because of the relative inadequacy of the suction biopsy. Most of the individuals in the older age group who have this megacolon have a short segment disease and one may not rely as adequately on the X-rays.

Surgical Treatment of Coronary Artery Disease

Francis W. Mergenthaler, M.D., Joseph P. Shea, M.D., Robert W. Berry, M.D.
and S. E. Marrash, M.D.

The introduction of digitalis in 1794, and the recognition of the value of oxygen therapy in this century has prolonged and improved the lives of a relatively small number of patients with coronary artery disease. However, many centuries of medical investigation and therapy have otherwise failed to substantially improve the prognosis until the past twenty years when four advances have occurred: 1) The development of closed cardiac massage and external defibrillation. 2) The use of cardiac pacemakers. 3) The development of selective coronary arteriography. 4) Attempts at surgical revascularization of the myocardium. It is now established that at least the first two of these developments, largely as encompassed in the modern coronary care unit, have improved the prognosis of patients with coronary artery disease—particularly in the acute phase.¹ Coronary arteriography has revolutionized concepts of diagnosis management and prognosis, has revealed the inaccuracies of much of the previous technology and has opened an era of precise evaluation of the disease. It will take many years

longer to fully evaluate the effectiveness of indirect myocardial revascularization as developed by Vineberg and others, but at present there appears to be improvement of survival after an 18 month period following the procedure.²

Cardiac surgery has made dramatic and well publicized advances, but with few exceptions has dealt with valvular or congenital disease which represent a small fraction of cardiac patients. Only in the past few years have surgeons directly attacked the coronary arteries and thereby opened the possibility of immediate physiologic improvement to the millions of people otherwise destined to die in the near future from myocardial infarcts. Combining the techniques of cardiopulmonary bypass with the principles and methods learned in peripheral vascular surgery, and applying them to patients whose coronary arteriograms have shown them to be in a very high risk group, it seems that we are on the threshold of a most significant advance in therapy.^{3,4} Although not long ago coronary artery disease was thought to be the province of internists alone, now many patients with this disease are evaluated and often treated surgically. (Table 1)

Minor Surgery

Work in progress raises the possibility that many patients will be temporarily sustained by such supportive minor surgical procedures as intra-aortic phase shift balloon pumping, extracorporeal assisted circulation and/or oxygenation etc. It has been shown that the use of temporary and permanent cardiac pacing is lengthening the lives of many patients with heart block and improving their physiologic status. Since the development of the pervenous technique of pacemaker implantation, hospital deaths associated with this procedure have become a rarity.

Major Surgery

Complications of coronary artery disease which require major surgery are not common, but occasionally an obviously moribund patient is salvaged in an emergency situation. Ventricular

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aneurysms impair cardiac function. These can usually be resected on an elective basis with low mortality and excellent results. Ischemia of the papillary muscles and other subvalvular apparatus of the mitral value can lead to mitral regurgitation with intractable congestive failure. Mitral valve replacement often restores adequate cardiac physiology. Repair of these and other ischemic cardiac lesions is now often combined with myocardial revascularization.

We have performed 68 major surgical procedures for coronary artery disease in either of two large community hospitals in the city of Bridgeport. Mammmary artery implantation has been carried out since 1967 and direct aortocoronary bypass has been done since May, 1969. (Tables 3, 4a, b)

Indications

All patients referred to us for consideration of surgical intervention have previously undergone selective coronary arteriography. Usually the physicians in consultation with cardiologist who performed the angiography have decided that surgery would benefit the patient. Indirect surgery candidates usually were severely symptomatic and were

accepted or declined by us chiefly on the basis of general condition, age and viability of the myocardium as judged by hemodynamic data and the ventriculogram. Candidates for direct surgery are selected on the basis of technical considerations i.e. a major perfusion deficit with patient artery segment beyond the occluded or stenotic area. Patients have not been turned down on the basis of recent myocardial damage or cardiac decompensation but every effort is made to have the patient in the best possible condition by virtue of medical preparation. At this writing approximately fifty percent of the patients studied in our community are considered candidates for myocardial revascularization. Of this group our current technical criteria determine that about seventy-five percent of these patients have arteries suitable for direct surgical reconstruction.

Patient Selection

(Table 2) All patients for aortocoronary bypass and ninety-three percent of those for indirect surgery were male. The youngest patient operated upon was thirty-three years old; the oldest was sixty. The mean age of patients for direct surgery is forty-two, seven years less than those undergoing mammmary artery implantation. Of the direct surgical patients fifty-two percent had previously sustained documented myocardial infarcts, fifty percent had severe anginal syndrome, and five percent had congestive failure requiring intensive medical therapy. Of the indirect surgical candidates twenty-eight percent had previous myocardial infarcts, seventy-six percent suffered from severe angina, and fifteen percent had congestive failure.

Technique

Mammmary artery implantations are carried out through a midsternotomy incision. The right mammmary artery is used for the anterior portion of the left ventricle and the left mammmary artery for the posterior or circumflex area. Myocardial tunnels are created by the use of a tapered plastic catheter and the vessels are secured in the tunnels while actively bleeding as modified from the technique described by Vineberg.⁵ The open-heart surgical team in the city of Bridgeport has been active since 1963. All patients for aortocoronary bypass are placed on cardiopulmonary bypass in routine fashion. After the midsternotomy incision is made, superior and inferior vena cavae are separately cannulated through the right atrium. Simultaneously the common femoral artery is exposed and cannulated. The saphenous vein is carefully resected and prepared for grafting. After removal of most of the ad-

TABLE 1
SURGICAL TREATMENT OF C A D

Minor	Major
Pacemakers	Complications
Supportive	Indirect Revascularization
	Direct Revascularization
62 cases	68 cases

TABLE 2

Aorto-Coronary Bypass	Mammmary Artery Implant
100% male	93% male
33-56 age range	38-60 age range
42 mean age	49 mean age
52% previous M I	28% previous M I
50% severe angina	76% severe angina
5% C H F	15% C H F

TABLE 3

	Cases	Operative Mortality (7 days)	Hospital Mortality	Total
Aorto-Coronary Bypass	22	1	2	3
Mammmary A. Implant	40	1	1	2
Miscellaneous*	6	0	1	1
	68	2	4	6
	100%	2.9%	5.8%	8.8%

* Table 4.

ventitia the vein is flushed and distended with saline. Any leaks are repaired with fine vascular sutures. The vein is reversed to render the valves incompetent and the former proximal end is transected at a forty-five degree angle. Cardiopulmonary bypass is then begun and the left ventricle is vented to decompress the heart in fibrillation. Electro-fibrillation is used for most cases but several procedures, usually the right coronary artery, have not required interruption of cardiac activity. With the patient on total bypass, the area selected by arteriogram for the distal anastomosis is dissected and controlled by 2-0 silk ligatures. We have worked with coronary arteries varying in size from 4 to 1 mm. external diameter. Most of them are approximately $2\frac{1}{2}$ mm. in diameter. The coronary artery is opened longitudinally using a #15 blade with care to avoid injury of the posterior wall of the vessel. (2.5x) Magnification with an optical loupe is sometimes used. An end to side anastomosis is then carried out with 7-0 Tevdek running technique except that 3 distal interrupted sutures are usually placed first. When the distal ligature is released, blood fills the graft to the first competent valve. Air is milked from the remainder of the graft and then blood is introduced through the graft by syringe to test the anastomosis. When this is satisfactory, fibrillation is discontinued and partial bypass is begun and maintained until the completion of the proximal anastomosis. A partially occluding vascular clamp is placed on the ascending aorta and an incision is made with long axis in the desired direction of the graft. The graft is trimmed to size at a 45 degree angle and sutured end to side by 5-0 Tevdek running technique. Air is evacuated and the clamp is removed. Only when we are satisfied that the suture lines are secure and the graft functioning, is bypass discontinued and the patient decannulated. If other coronary arteries are to be revascularized the procedure is repeated and the proximal end of the graft is either sutured as a branch to the initial bypass graft or in a second anastomosis directly on the ascending aorta. Our average bypass time has been forty minutes total (distal anastomosis) and sixty minutes partial, although we have had perfusions up to five and one-half hours with successful outcome. Extra time is required when multiple grafts are done or when the dissection of the coronary arteries is unusually difficult.

Mortality

(Tables 3, 4, 5) Forty patients have undergone mammary artery implantation. One patient died of

intractable arrhythmias on this third postoperative day. A second patient died 13 days postoperatively of a sudden massive myocardial infarct. 22 Patients have undergone aortocoronary bypass. One patient died the day of surgery from a myocardial infarct believed to have been sustained while the chest was being opened. Another patient had an uneventful postoperative course but on the day prior to her planned discharge, she had a sudden infarct. This procedure was done on a semi-emergency basis because of an episode of severe ischemia while she was awaiting elective surgery. She had diffuse disease of the right coronary artery and ninety percent stenosis of the left anterior descending artery proximal to the first major diagonal branch. She was found to have a 1 mm. atherosclerotic distal left anterior descending coronary artery into which the bypass was placed. Both her preoperative ischemia and fatal myocardial infarction occurred in the distribution of the anterior descending artery. At autopsy both graft anastomoses were patent but the anterior descending artery had thrombosed distal to the graft. Another patient succumbed to serum hepatitis six weeks following surgery. He had sustained three myocardial infarcts with two episodes of cardiac arrest in the CCU prior to surgery. He underwent resection of a left ventricular aneurysm; bypass to the distal right coronary artery, and bilateral mammary artery implantation. His postoperative course was stormy but he had improved markedly when low grade fever heralded the onset of fulminant hepatitis which proved fatal

TABLE 4 (a)
MISCELLANEOUS PROCEDURES FOR MAJOR COMPLICATIONS OF C A D

Ventricular Aneurysm	3
Mitral Regurgitation	2
Interventricular Septal Defect	1

TABLE 4 (b)
MYOCARDIAL REVASCULARIZATION

<i>Mammary artery implant</i>	
a. Single	4
b. Double	36
	40
<i>Aorto-coronary bypass</i>	
a. To right coronary artery	4
b. To left anterior descending artery	3
c. To circumflex coronary artery	3
d. To both left and right coronaries	4
e. Bypass combined with mammary artery implant	5
f. Bypass combined with ventricular aneurysm resection	3
	22

within thirty-six hours. At autopsy the mammary arteries and the bypass graft were found to be patent. An unusual patient survived myocardial infarction in another hospital but went on to develop signs of left to right shunt and was transferred to our hospital after two weeks of intractable pulmonary edema with superimposed bronchopneumonia. Emergency cardiac catheterization confirmed the presence of ventricular septal perforation. He was operated upon as an emergency, and placed on cardiopulmonary bypass under local anesthesia. The defect (3 x 2 cm.) was repaired using a Teflon patch and he showed dramatic improvement postoperatively, with a six liter diuresis in the first two days after surgery. Pseudomonas bronchopneumonia required controlled ventilation for approximately two weeks. A malfunctioning ventilation system caused a hypoxic episode on the 16th postoperative day and myocardial ischemia led to fatal cardiac arrest. At autopsy the septal patch was intact and uninfected.

Complications

(Table 5) All of these patients require the usual close monitoring and careful management necessary for cardiac surgery. The frequent occurrence of regular sinus tachycardia following mammary implantation has led to the routine use of Propranolol with good results. One patient who underwent mammary implantation bled postoperatively from the posterior myocardial tunnel. Reoperation the same night was followed by an uneventful recovery. One patient who underwent combined mammary artery implantation and right aortocoronary bypass bled from his anterior medi-

astinum. This was treated conservatively and 1500 cc's of old blood was removed by thoracentesis six days following surgery. His recovery was otherwise uneventful. Approximately twenty-five percent of patients undergoing aortocoronary bypass have shown marked pulmonary capillary shunting usually requiring controlled ventilation. Characteristically these patients appear clinically to be doing well but arterial oxygen saturation begins to fall one or two days after surgery. The need for ventilatory assist usually persists from four to twelve days and all patients have subsequently made complete recoveries. None of these patients had clinical evidence of an anatomic pulmonary lesion. We can find no correlation with lesion, procedure or pump technique. A reflex mechanism is postulated.

Late Results

(Table 6) Six patients in this series have been lost to follow-up were well when last seen. All patients in contact report marked improvement postoperatively and all have returned to normal activities. No patients who underwent aortocoronary bypass have suffered evidence of myocardial infarcts or angina since surgery. Four patients who underwent mammary artery implantation have subsequently died of myocardial infarcts. Three of these were within one year following surgery, one nearly two years postoperative, died of congestive failure with an adynamic left ventricle. Five patients in the indirect surgical group continue to have significant angina and are regarded as unsuccessful results, although all claim subjective improvement.

Discussion

Reports from many centers are confirming that direct reconstitution of impaired coronary artery flow can be accomplished in the majority of patients. Hospital mortality rates average approximately ten percent. Follow-up studies have shown that aneurysmal dilatation of the saphenous vein graft does not occur, and that late thrombosis of a previously patent graft is rare, at least at the one year interval.⁴

TABLE 5

Lesion	Procedure	Cause of Death	Time
2 Ves	Bil Mam	arrhythmia	3 days
3 Ves	Bil Mam	massive M I	13 days
90% LCA	A-LAD; PD	massive M I	1 day
3 Ves	LV An; A-RCA; Bil Mam	serum hepatitis	38 days
2 Ves	A-LAD	massive M I	9 days
VSD	VSD Patch	hypoxia	16 days

Legend
2, 3 Ves = diffuse atherosclerosis of 2, 3, of the coronary arteries
90% LCA = 90% stenosis of mainstem left coronary artery
VSD = Interventricular septal defect
Bil Mam = bilateral mammary-myocardial implantation
A-Lad = aorto coronary saphenous vein graft to the left anterior descending coronary artery; PD = posterior descending coronary; RCA = main right coronary
LV An = resection of left ventricular aneurysm

TABLE 6
RESULTS

	Pts	Alive	C A D Deaths	Other Deaths	Lost to follow-up
Mammary A. Implant	38	27	4	1	6
Aorto-Cor. Bypass	19	19	0	0	0
	Pts	M.I.	Angina	CHF	Excellent
Mammary A. Implant	27	4	5	2	82%
Aorto-Cor. Bypass	19	0	0	0	100%

We believe that the established principles involved, and current reported experience with these procedures make general clinical application warranted. The mortality and morbidity reported here is consistent with that reported in the largest series. Our experience indicates that a large community hospital can provide the resources necessary to cope with the particular problems of surgical management of these patients. We have had difficulty persuading patients to report for postoperative angiograms. The few that have been adequately studied have shown patient saphenous vein grafts in all instances and patent mammary arteries in all but one case. More and more reports are forthcoming with results similar to ours showing low mortality, dramatic relief of cardiac symptoms and emerging evidence of improved survival.^{3,4 6-8}

It is estimated that over 3,000,000 Americans have severe coronary artery disease at this time, and many more have subclinical disease. Approximately 500,000 people will die this year of myocardial infarcts. If the current trend of favorable evaluation of these procedures continues, the number of candidates for surgery will soon be so large as to mandate its performance in most large community hospitals if our medical system is to provide the care needed and demanded by the people.

Addendum: This report covers cases operated upon before October 1970. Since then a large number of direct coronary procedures have been done with good results.

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Science and scholarship presuppose a belief in knowledge "for the benefit and use of life" (Bacon), a belief in the perfectability of man.

Laws do not flourish amidst preoccupation with destructive repercussions or where the value of knowledge is doubted.

The last decades of this century may well witness a crisis of conscience, raising long overdue questions concerning the purpose of knowledge. The prospect inspires anxiety and hope but hardly confidence.—Reinhard Bendix, *Embattled Reason; Essays on Social Knowledge*. Oxford University Press, New York, 1970, XII, 348, 396, 975.

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Connecticut Medicine

Editorials

Hazards Of Coronary Arteriography

The scope of cardiovascular surgery is widening and now requires delineation of the precise anatomical defect in the heart. This precision in diagnosis has been made possible by angiocardiology but like any techniques we need to know the "costs" as well as the benefits. The financial cost is known and is considerable. The cost to the patient in complications, anxiety, pain, is now reported in some detail.¹⁻³ They are related to both the portal of entry of the catheter and the intubation of and injection of radioopaque medium into the coronary arteries.

Arterial thrombosis occurring after selective coronary arteriography and requiring surgery was seen in about nine percent of patients who had brachial arteriotomies and in four percent of these in whom the percutaneous femoral approach was used. There is clearly a small but unavoidable incidence of this complication which fortunately can usually be remedied by prompt surgery.

Potentially severe complications including ventricular fibrillation heart block extreme sinus bradycardia and myocardial infarction occurred in 2.5 percent of 5,725 patients submitted to coronary arteriography in various centers of the country and Europe. Eleven of 1916 of these patients died. Obviously coronary arteriography cannot be undertaken lightly and the selection of patients is of the utmost importance.

At present saphenous bypass grafts are being performed on two groups of patients. Firstly those with intractable angina pectoris unresponsive to medical treatment and secondly young patients, especially men who have had one or more myocardial infarctions.—L.H.N.

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Medicine And Logic: II The Doctor As A Rational Decision Maker

All doctors are familiar with a symptom or sign or test result on which in their experience

great reliance can be used in discriminating between two or more diseases. To this initiative feeling of evidential value a measure can now be applied. Evidence can be measured by the way it changes the probabilities or odds. With a new piece of evidence the odds in favor of a disease change and the value of the evidence might be measured by the change in odds. Such a measure is clearly necessary in any formal description of the process of diagnosis.

The activities of diagnosis, prognosis and treatment are an interpreted activity. In the course of a diagnostic process the doctor must at each stage select some "test" such as a question, physical examination or laboratory test. The response to each test is one of a number of possible "indicants" so we have here an analogy in which the doctor and patient make moves in turn. When selecting a test the doctor should take into account the "cost" of the test and also its potential "utility" in the sense of cutting down on the search. The expected weight of evidence in a precise technical sense can be used as one such "utility". When an end point of the diagnostic search is reached the doctor must make decisions regarding treatment and prognosis. At this stage he must take into account the possible outcomes of the available treatment and their "costs" and again his decision should be made in accordance with the "principle of rationality".

The implications of medical logic are far reaching and could revolutionize our approach to our patients. If we use some estimate of the evidential value of an "indicant" we may well find that some of the symptoms, signs and test results used at present cover so little evidence that they could be discarded. Or we may find the reverse, that a symptom carries an unexpectedly large weight of evidence. An example is the recently found fact that the duration of itching in jaundice at least equals the discriminatory value of gamma globulin level. Measurements of this power in a wider context could revitalize the art and science of history taking. We may also find that the evidence contained in one indicant is already largely contained in another and that little is gained by eliciting both. Further, when

we balance the evidence obtained against the "cost" of a test we may find that many investigations so often requested for example, barium meals, can in certain circumstances not be justified. We may expect surprises when we start "buying" our evidence in the least expensive market.

If these principles are applied they could mean a considerable reduction in the number of tests used in clinical medicine. This reduction coupled with generally accepted definitions of all "indicants" could mean an appreciable simplification in both teaching and practice. Such a logical approach would lead not to the decline of clinical medicine but rather to its renewed vigor.

Other consequences could also ensue. One of the applications of the computer that seems attractive is its use in handling hospital clinical records. Thus far all attempts, seem to have failed. The reason they have failed is because the present records have not been developed to rest on a logic of medicine. We have first to know what we should record before attacking the much simpler technological problem of how to record data in a computer file. The logic of medicine will for the first time allow us to develop a rational theory for deciding which parts of a clinical record should be retained. Then each part can be used as evidence in future diseases and, therefore, carry an expected value. A record should be discarded if its value is less than the cost of the transcription and retention.

The practical realization of the ideas outlined above is at such an early stage that it is impossible to state categorically that a system of clinical medicine based on the principle of rationality would be superior on balance to the working of the traditional system. But it would be most surprising if it found no place. Its realization basically rests on the development and application of mathematical theory and the computer. The application in medicine can take place only by the collaboration of doctors and mathematicians. However, it is the doctor who must acquire enough insight to be able to collaborate with the mathematician in abstracting from the multifarious data the essence of the problem. Only then can the mathematician say whether the problem is soluble or whether more research is required.

To solve mathematically any clinical problem in this early stage it is essential to select a simple one and only the very experienced doctor can be

relied on to see where the problem really lies. The study will have to be prospective, will require explicit definition of all the indicants, the disease classes and the treatments and their outcome. With the use of the statistics which result from the study, programmes will be written and their effectiveness in solving the problem could be compared with traditional methods. This approach is not costly and could be tried in a number of centers. Obviously, the complete development of any logic for the whole of medicine is likely to be a long and tedious process.

There is little doubt that in the development of mathematical methods, much computing power will be necessary. However, the ultimate place of the computer in the day to day practice of such a logic of medicine is as yet undetermined. Doctors fear that medical practice might be dehumanized by the computer. It is, however, true to say that when our intuitive judgments are made rational that we will gain a better grasp of the best way to function as doctors. The introduction of the computer means the development of a new partnership in which the doctor and the computer would do the work for which each is best fitted. Each doctor would then have at his disposal the best rational help in the solution of his problems. This should be our goal.—L.H.N.

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The Aging Process In Prospect

The biology of man himself in those aspects that are uniquely human, his behavior, his genetics, the processes that determine growth, individual differences and the nature of aging and death is a new world for scientific conquest. Since the cancer problem is intimately related to the aging process it may very well be that the solution of both might come from the solution of either. It is therefore not surprising that much attention is directed to the aging process.

Broadly speaking, there are two major theories about the mechanism of aging. One proposes that the process is genetically controlled. In this sense it may be allied to development. The other theory suggests that the major factor involved in aging is random cell damage mediated either by mutation or through errors of protein synthesis. There is no conclusive evidence in support of either hypothesis and two recent reports

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High cure rate:* 96% of 571 males, 95% of 294 females
(Dosages, sites of infection, and criteria for diagnosis
and cure are defined on page 3 of advertisement).

**Assurance of a single-dose, physician-controlled
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**No allergic reactions occurred in patients with
an alleged history of penicillin sensitivity
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antibody studies were not performed**

**Active against most strains of
Neisseria gonorrhoeae *in vitro* (M.I.C. 7.5-20 mcg/ml)**

**A single two-gram injection produces peak serum
concentrations averaging about 100 mcg/ml in
one hour** (average serum concentrations of 15 mcg/ml
present 8 hours after dosing).

*Data compiled from reports of 14 investigators.

NOTE: Antibiotics used in high doses for short periods of time
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syphilis. Since the treatment of syphilis demands prolonged
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in the treatment of syphilis, patients being treated for gonorrhea
should be closely observed clinically. Monthly serological follow-up
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Trobicin and the gonorrhea challenge

An accelerating epidemic— a decelerating susceptibility to penicillin

Gonorrhea is now the most prevalent reported communicable disease in the nation. The estimated number of new cases of gonorrhea in the United States exceeded two million for the first time in 1970. To compound the problems, strains of *N. gonorrhoeae* increasingly resistant to penicillin and other antibiotics are appearing throughout the country. Schedules of treatment which were effective only a few years ago now result in a significant percentage of treatment failure. *In vitro* studies have demonstrated that resistance of *N. gonorrhoeae* may also develop to Trobicin.

Thus, while aqueous Procaine Penicillin G remains the drug of choice for the majority of patients, the need for a non-penicillin, intramuscular antibiotic for acute gonorrhea in the male and female is abundantly clear. Such an antibiotic should be effective following a single intramuscular injection—and it should not demonstrate cross-resistance with penicillin

Trobicin—a new alternative specifically for the treatment of acute gonorrhea

Trobicin is indicated in the treatment of acute gonorrheal urethritis and proctitis in the male and acute gonorrheal cervicitis and proctitis in the female when due to susceptible strains of *N. gonorrhoeae*.

High cure rates: 96% of 571 males, 95% of 294 females

Clinical Results with Single-Dose Treatment, Intramuscularly* (Data compiled from reports of 14 investigators**)

	Dosage	Number of Patients	Number Cured	Percent Cured
Adult Males: Gonorrheal urethritis	2 grams	475	457	96%
	4 grams	96	93	97%
Adult Females: Gonorrheal cervicitis	4 grams	294	280	95%

Diagnosis was confirmed by cultural identification of *N. gonorrhoeae* on Thayer-Martin medium in all patients. Criteria for cure: negative culture after at least 2 days post-treatment in males and at least 7 days post-treatment in females. Any positive culture obtained post-treatment was considered evidence of treatment failure even though the follow-up period might have been less than the periods cited above under "criteria for cure" except when the investigator determined that reinfection through additional sexual contacts was likely. Such cases were judged to be reinfections rather than relapses or failures. These cases were regarded as non-evaluable and were not included in the table above.

No allergic reactions occurred in patients with an alleged history of penicillin hypersensitivity when treated with Trobicin, although penicillin antibody studies were not performed.

Chemically distinct

Trobicin is structurally not related to any other antibiotic commonly used to treat gonorrhea.

The assurance of a single-dose, physician-controlled treatment schedule

Intramuscular injections should be made deep into the upper outer quadrant of the gluteal muscle.

Adult male: Single 2 gram dose I.M. in acute gonorrheal urethritis. Single 4 gram dose I.M. (should be divided between two gluteal injection sites) in gonorrheal proctitis and in patients being re-treated after failure of previous antibiotic therapy. In geographic areas where antibiotic resistance is known to be prevalent, initial treatment with 4 grams intramuscularly is preferred.

Adult female: Single 4 gram dose I.M. (should be divided between two gluteal injection sites) in acute gonorrheal cervicitis and proctitis.

Safety for use in pregnancy has not been established, nor has safety for use in infants and children.

The following reactions were observed during the single-dose clinical trials: soreness at the injection site, urticaria, dizziness, nausea, chills, fever and insomnia.

During multiple-dose subchronic tolerance studies in normal human volunteers, the following were noted: a decrease in hemoglobin, hematocrit and creatinine clearance; elevation of alkaline phosphatase, BUN and SGPT. In single and multiple-dose studies in normal volunteers, a reduction in urine output was noted. Extensive renal function studies demonstrated no consistent changes indicative of renal toxicity.

*4-gram doses were injected in two gluteal sites.

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acute gonorrheal urethritis and proctitis in males
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(spectinomycin dihydrochloride pentahydrate)—For Intramuscular injection: 2 gm vials containing 5 ml when reconstituted with diluent. 4 gm vials containing 10 ml when reconstituted with diluent.

An aminocyclitol antibiotic active *in vitro* against most strains of *Neisseria gonorrhoeae* (MIC 7.5 to 20 mcg/ml). Definitive *in vitro* studies have shown no cross resistance of *N. gonorrhoeae* between Trobicin and penicillin.

Indications: Acute gonorrheal urethritis and proctitis in the male and acute gonorrheal cervicitis and proctitis in the female when due to susceptible strains of *N. gonorrhoeae*.

Contraindications: Contraindicated in patients previously found hypersensitive to Trobicin. Not indicated for the treatment of syphilis.

Warnings: Antibiotics used to treat gonorrhea may mask or delay the symptoms of incubating syphilis. Patients should be carefully examined and monthly serological follow-up for at least 3 months should be instituted if the diagnosis of syphilis is suspected.

Safety for use in infants, children and pregnant women has not been established.

Precautions: The usual precautions should be observed with atopic individuals. Clinical effectiveness should be monitored to detect evidence of development of resistance of *N. gonorrhoeae*.

Adverse reactions: The following reactions were observed during the single-dose clinical trials: soreness at the injection site, urticaria, dizziness, nausea, chills, fever and insomnia.

During multiple-dose subchronic tolerance studies in normal human volunteers, the following were noted: a decrease in hemoglobin, hematocrit and creatinine clearance; elevation of alkaline phosphatase, BUN and SGPT. In single and multiple-dose studies in normal volunteers, a reduction in urine output was noted. Extensive renal function studies demonstrated no consistent changes indicative of renal toxicity.

Dosage and administration: Keep at 25°C and use within 24 hours after reconstitution with diluent.

Male—single 2 gram dose (5 ml) intramuscularly. Patients with gonorrheal proctitis and patients being re-treated after failure of previous antibiotic therapy should receive 4 grams (10 ml). In geographic areas where antibiotic re-

sistance is known to be prevalent, initial treatment with 4 grams (10 ml) intramuscularly is preferred.

Female—single 4 gram dose (10 ml) intramuscularly.

How supplied: Vials, 2 and 4 grams — with ampoule of Bacteriostatic Water for Injection with Benzyl Alcohol 0.9% w/v. Reconstitution yields 5 and 10 ml respectively with a concentration of spectinomycin dihydrochloride pentahydrate equivalent to 400 mg spectinomycin per ml. For intramuscular use only.

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do not really throw much light on the matter. The evidence provided by Lints and Lints is in favor of genetic and developmental theory. They interfered with development with drosophila during the larval stage by temperature control and found that development was delayed if the larvae were kept at a lower temperature. By thus lengthening the developmental period they increased the life span of the adult. They also lengthened the developmental period when the larva population were kept at high density and again this was reflected in increased longevity. This work suggests that the first of the theories might be correct.

However, it has also been shown that cellular damage resulting from errors in protein synthesis also can cause death. Lewis and Holliday² have shown that in two senescent mutants of the fungus neurospora death is preceded by an accumulation of altered proteins presumably resulting from errors in biosynthesis. The presence of aminoacid substitutions was demonstrated by an increase in the thermolability of glutamic dehydrogenase enzyme and the extent of the altered protein was determined by measuring the relative amount of immunological cross reacting material.

The most interesting of their findings, however, was the association of a high mutation rate with the necessary alteration in protein and they thought that this was mediated by changes in enzymes concerned with DNA synthesis. Death in this instance might therefore result from errors in either protein or the hereditary material. This work with neurospora although it provides evidence that alterations in cellular proteins can accumulate and cause death does not necessarily have a bearing on aging in higher organisms. It, however, has led to methods of reducing the errors in protein synthesis. One method is the use of antioxidants in higher animals.

Several workers have found that mice fed diets containing large amounts of added antioxidants live longer than those fed a standard laboratory diet. The size of the effect varies with the substance added but it can be obtained with a wide variety of agents including alpha-tocopherol, ethoxyquin and others. Such studies suggest that the natural and radiation induced aging may involve oxidative free radical attack on long term molecules or lipids including those of mitochondria.

In the course of antioxidant screening studies Comfort has observed a lifespan effect in C3H mice of both sexes receiving ethoxyquin in a standard pellet diet. The 40 control mice received a standard pellet diet and another 40 received an identical pellet diet moistened and reconstituted with 0.5 percent ethoxyquin in oil both given freely. There was no sex difference in survival in either group but survival curves for both sexes differed significantly in the treated group. Those fed antioxidant grew into significantly lighter adults, lost weight earlier and this activity and condition were strikingly better retained with age and they lived significantly longer.

These experiments have their drawbacks since what has not been controlled is the effect of covert caloric restriction alone. Also that for broiler fowls, excess antioxidants could merely reduce the "toxicity" of normal laboratory diets. Nevertheless, there was a postponement of death which could be due to some predominant age dependent process. Much work remains to be done, but work on the aging process is in full swing and here is a new world for scientific conquest.—L.H.N.

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Peace Of Mind

The bug disease kills more people than any other disease in the world. It is very important, therefore, not to let anything bug you.—Arthur Logan, M.D.

After world War II, there was a great debate over whether contemporary man's anxieties required mental hygiene or religion as prophylactic or cure. The anxieties and tensions are still with us perhaps in greater abundance and with more widespread individual and societal psychic distress than ever before. "Peace of mind" was splashed before the public eye once again this summer when *Look's* July 27th issue featured as its principle offering the answers given by sixteen prominent Americans to questions about the ways they personally find "surcease from stress" in this troubled world which surrounds and deeply affects us.

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There were some things about the replies that deserve some reflection on the part of physicians who are concerned about the emotional along with the physical well-being of persons in every age group including the child, as well as, the most senior of citizens. It was striking and also gratifying to the medical profession to see master musician, Duke Ellington, make the statement that it was his physician who helped him to discover peace of mind (see quotation above). To resist the forces that might disrupt one's equanimity might be regarded as excessive concern for oneself Ellington admits. Such selfishness can be a virtue—essential for survival and without survival we cannot protect those whom we love more than ourselves.

Several of the contributors find themselves able to maintain peace of mind only through productive activity. Julian Bond said "I rest best when my mind and body are busy and find no benefit from sterile reflections and idle contemplation. Strenuous activity helps to achieve more inner serenity than a life of leisure." Peace of

mind is not something that can honestly be found in isolation or exclusion of the rest of the world, said Joan Baez.

However, others found peace from escape, walking through the country side, a small boat and the sea, going hunting, swimming or boating. Cardinal Terence Cooke of New York City revealed that his own best means of coping with stress and pressure are "speaking face-to-face and heart-to-heart with another person and by resorting to "prayer and reflection." Margaret Mead, the celebrated anthropologist, gets her peace of mind by scheduling a change in her habitual activities at a specific time in the future to which she can look forward. A sort of postponed pleasure.

By comparison, the entertainer, Sammy Davis, Jr., reports that "the only way that works for me is to try to relate to positive things." He deliberately searches each day for the kind of story that can help him reaffirm his faith in human kindness, in humanity itself. He had been "as angry a man as any around", but now

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credits Judaism for having taught him to maintain peace of mind by continually looking for "what is good—in people—in today—in the future."

What these prominent American personalities are revealing to us is first that many men and women are pursuing peace of mind thoughtfully and purposefully, at a time when stress, tensions and trouble of all sorts are running at high tide and finding their way to almost everybody's doorsteps. Many have been helped like Duke Ellington by a physician to find his own personal pathway to equanimity and not just through prescribing tranquillizing medications. This fact should prompt any physician to ask himself whether he is doing all he can to help his patients and all those whose life he influences, to find their individualized or personalized way to inward peace.

It is obvious that every person who seriously wished to discover the appropriate mind or soul refreshing technique for him, the means that will work best, must take a good long look at his own nature and life history, then put to use the insight he derives about what tactic is rather consistently successful for him or her. Often the assistance of another person will facilitate this exploration and the discovery of the best method or route for a given individual. This is where doctors can helpfully step in along with others especially parents, clergymen and teachers to help the person to grow and become more human, more fully alive.

Another thing is apparent from the *Look* symposium, that attainment of peace of mind takes effort and plan as Margaret Mead pointed out. What a worthwhile investment of time and personal resources it would be for every adolescent and adult in our world to give an adequate amount of thought very soon to the vital issue

of peace. We will never attain and enjoy peace of mind in a lasting and reliable way on the family, civic, national or international level until peace exists within the hearts of the members of all these segments of society.

On the psychological level, it turns out that two motives dominate the ideas of the responders work and play. Strong attention to the reality principle requires work. Attention to the pleasure-principle requires play. The ideal would be pleasure from both work and play.—L.H.N.

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Rubella: Will Vaccination Prevent Birth Defects?

The ability of many bacteria and viruses, including rubella, to cause disease is often decreased when these organism grow under laboratory conditions than in the natural host. Such attenuated strains differ from the wild type both genotypically and phenotypically. In 1966, four years after isolation of the rubella virus, Harry M. Meyer, Jr. and Paul D. Parkman at the NIH announced the first successful vaccination of children with an attenuated strain of rubella virus. HPV₇₇ refers to high passage virus which had been passed 77 times in cultured monkey kidney cells. Two derivatives are licensed and in use in this country one grown on duck embryo cultures and one grown in canine renal cell cultures. Several other strains have been developed and tested for their suitability as vaccines because use of HPV₇₇ is often followed by temporary arthritis. One is grown on human fibroblasts and preliminary trials by Plotkin and by Dorothy Horstmann of Yale seem to indicate that this vaccine also is safe and effective.

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Another factor of importance in determining the value of a vaccine is the immunologic response to the vaccine as compared to that produced by natural infection. It had been thought that the life-long immunity conferred by many viral diseases was the result of a single infection. This may be true with some diseases. Nevertheless, recent findings suggest that with many, perhaps most viral diseases, reinfections occur and act as boosters that maintain the immune state. The rubella virion consists of a core of RNA and a capsid or coat that contains proteins, carbohydrates and lipids. The complex viral capsid elicits the formation of several antibodies found in the serums of persons who had had rubella.

Antibodies are found in response to several types of rubella vaccines but in much lower amounts than after natural infection. The vaccines can be given intranasally as well as by injection and the intranasal route is thought by some to stimulate secretion of antibodies by cells in the respiratory tract. Scientists who have investigated the protection afforded by Rubella vaccine have reported conflicting results. Horstmann studied rates of re-infection with wild type rubella virus of vaccinated and naturally immune men during an epidemic of rubella at Ford Ord, California. Tests for antibodies showed that 50 percent of the vaccinated men were reinfected. There was evidence for reinfection in only 3.4 percent of the naturally immune men. Chang also found that 50 percent of institutionalized children vaccinated with a rubella virus vaccine were reinfected during an outbreak of rubella. It is important to note that those vaccinees reinfected did not become ill. In both studies vaccination preceded the epidemic by only a few months.

The danger, of course, is that if the vaccine protects only against illness and not against reinfection, it is possible that a reinfected vaccinated person may transmit the wild type vaccine to a susceptible person. The probability of such contagion is known to be low. Throat cultures taken from vaccinated reinfected individuals have shown that during reinfection virus is shed from the throat but for a shorter period of time if at all than during primary infections. Nevertheless, there may be real danger because reinfection without maternal illness or symptoms could if virus enters the blood stream jeopardize the fetus.

Rubella in the developing fetus can cause

many different kinds of congenital malformations such as cataracts, mental retardation, deafness, cardiac and other abnormalities. Maternal rubella is most dangerous to the fetus during the first trimester of pregnancy but affected children can also occur during the fourth month. Since some women undoubtedly have inapparent rubella in early pregnancy it is not known what percentage of children born to women who had rubella at this stage of pregnancy are victims of congenital rubella. Figures ranging from 10 to 40 percent have been reported. Chang recognized cases of maternal rubella, the incidence of congenital abnormalities in about 35 percent.

The USPHS recommends that all young children be vaccinated and also suggests that vaccination be considered of susceptible non-pregnant women only when a physician can determine by serologic tests her immunologic status. Then if he does vaccinate he must count on the woman against becoming pregnant for 2 or 3 months after vaccination. Because of the uncertainty concerning the risks involved, the vaccine is withheld from pregnant women.

Some scientists, however, disagree with the recommendation of the PHS. This dissenting group advocates that susceptible women and adolescent girls be the primary candidates for vaccination against rubella. They agree that because trials have indicated that the vaccine does not give complete immunity as does the disease itself, vaccination of small children may lead to a future population of young women who would be more susceptible than if there had been no vaccine at all. It is estimated that in the U.S. 80-85 percent of adults are naturally immune to rubella as a result of having had the disease. It is doubtful that vaccination could achieve this level of protection in the population.

Proponents of vaccination of children argue that immunization of this segment of the population will eliminate the main reservoir of rubella virus and in this way eradicate the disease as for example polio has been wiped out by this method. But authorities do agree that several years of experience with the vaccine during which there is thorough reporting of cases to public health officers and surveillance of vaccinated persons to determine persistence of immunity and ratio of reinfection among them will be needed before the value of the vaccine in preventing congenital rubella can be accurately assessed.—L.H.N.

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Contamination Of Food By Food Handlers

It seems to be a practical impossibility to produce meat that is absolutely free from bacterial contamination. This is true not only of raw meat but cooked meat as sold in shops. There is, of course, ample evidence that animals as well as man harbor a large number of drug resistant intestinal bacteria. Animals have been incriminated as a source of drug resistant *E. coli* for man and it has been shown that very many animal coliform organisms may be required to effect colonization within the human intestinal tract.

A recent study indicated that a large percentage of freshly slaughtered carcasses are contaminated with drug resistant fecal *E. coli*. This raises the question whether carcass contamination is being carried through to the consumer on meat and meat products from retail butcher shops. *E. coli* was used as a test organism. With the knowledge we have to the presence of bacterial drug resistance in live animals, of bacterial contamination of meat carcasses, and of the degree of fecal contamination of meat for human consumption, it will be possible to suggest measures that will reduce bacterial pollution of food by food handlers.

Walton and Lewis¹ studied 100 meat samples purchased from 25 retail butcher shops in ten towns in Essex. Twenty-five samples of each of two cooked meats (roast pork and cooked ham) and of two fresh meats (minced beef and pork sausage) were chosen for investigation. In the past and with scarcely any direct evidence it has been suggested that drug resistant enteric bacteria of animal origin have made a considerable impact on the R factor load of human enteric bacteria. What Walton and Lewis found was that large quantities of multiple resistant *E. coli* are not present in meat and meat products destined for human consumption. However, all four types of meat examined were heavily contaminated

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with various bacteria and this is especially disturbing in the case of the cooked meats.

Many of the contaminating bacteria had an optimal growth temperature of less than 37°C which clearly implicates sources other than intestinal contents as the origin of these bacteria. A similar lack of fecal E coli in meat products was recently reported by Alexander and Tittyer who stressed a need for strict plant sanitation and the education of plant employees in personal hygiene and proper work methods. The results of Walton and Lewis as well as the two previous studies probably indicate that under normal circumstances, drug resistant colicin producing enteric bacteria although present on freshly slaughtered carcasses in large numbers are not transferred to retail meat and meat products in numbers that could increase the intestinal resistant problem already present in human beings.

There is, of course, the problem of distinguishing human and animal strains of E coli. Some workers have used O antigen serotyping, but this technique is limited in its application and further studies are needed using the more superficial antigens to obtain more meaningful results. Most workers investigating food contamination put great emphasis on the need to improve hygiene in respect of kitchen staff and other food handlers. Likewise, the bacterial contamination discussed in the study noted above indicates a serious pollution of food by human beings.

The failure to demonstrate gross contamination by bacteria with resistant patterns similar to those found in farm animals suggests that the use of antibiotics in agriculture may not have given rise to the large number of drug resistant coliforms currently present in the human population. There is now ample evidence to support this suggestion and it now remains for those concerned with public health to examine more carefully the contamination by drug resistant bacteria of foods by humans rather than laying consistent blame on the agricultural community alone.—L.H.N.

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Exercise And Coronary Heart Disease

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*U.S. PATENT NO. 2,895,877

and more specifically coronary catastrophe. As more evidence becomes available it becomes clearer that a number of components of our way of life may be involved in the explosive increase in the cardiovascular mortality. A high saturated fat diet among sedentary individuals seems more likely every day to be an important factor. Convincing evidence of the importance of decreasing the amount of saturated fat in the diet in order to avoid a second cardiovascular crisis (secondary coronary stroke or angina pectoris) have been furnished by the superb study of Leren in Oslo.¹

Mounting evidence suggests that cigarette smoking is one of the contributing factors. Untreated hypertension has of course long been recognized as predisposing to strokes as well as to coronary disease. Obesity particularly in conjunction with hypertension, hypercholesterolemia or heavy cigarette smoking predisposes to heart disease. Excessive fatigue (lack of sleep) may be a factor. Finally it appears that lack of exercise may be of critical importance in predisposing to heart disease in part because of the relationship of inactivity to obesity and hypercholesterolemia and in part because of the benefits of exercise per se.

Mayer² has made an excellent case for the primary contribution of inactivity as a cause of obesity. He demonstrated that when activity is reduced below a critical level in experimental animals and in adult men that food intake does not decrease proportionately and obesity develops. He found inactivity also a major factor in production of obesity in certain public school children and in some children in summer camps. The obese girls ate less, not more, than their normal counterparts but spend strikingly less time (two to three hours less) in activities involving any amount of exercise.

While inactivity is thus of paramount importance in the case of obesity in children it is apparently at least as important in explaining the increase in prevalence of obesity in adults who Mayer points out though eating less than our forebears are more obese. The only possible explanation, considering the laws of conservation of energy, is that calorie expenditure ascribed to physical activity has decreased faster than food intake with the difference accumulating as fat. Actually what we now regard as a moderately active man who engages in two hours of walking every day, gardening and some sport over the

week-end was considered a sedentary man at the turn of the century.

Exercise both in animals and man seems to lower serum cholesterol levels even in subjects consuming a high fat diet. Lumberjacks in Finland on a high calorie, high fat diet, exhibited serum cholesterol levels no higher than an average Finnish man on much lower calorie intake and much lower fat intake. Gesell and Mayer found similar results in comparing an active Swiss village population with a daily calorie intake of a 1000 K. calorie higher than an urban population not so active. The serum cholesterol levels of both men and women on the high physical activity and high fat intake regimen were significantly lower than those found in the urbanized men.

Exercise seems to have a significant protective effect on development of heart disease. Morris from a study of bus drivers and conductors in London inferred that the higher mortality in bus drivers was due to their relative inactivity as compared to conductors. He then extended his study comparing rural mail clerks and rural delivery mailmen. The mortality here again was considerably less among the walking than among the sitting mailmen. A study by Taylor, et al in this country among railroad workers confirmed the inverse relation between exercise and mortality data. The mortality of clerks was 5.7/1000, 3.9/1000 for switchmen and 2.8/1000 for section hands. How does exercise produce this salutary effect on development of coronary heart disease?

Mayer in his laboratory has clearly established that exercise may favorably affect the course of coronary heart disease by one or more of several means. It might reduce obesity and hypercholesterolemia as noted above and in this way it may actually delay the progression of the disease. It may also and very likely does stimulate the growth of collateral channels during the development of the disease process. We have known since 1955 from Eckstein's³ superb studies on dogs, that the extent of collateral blood flow through the coronary arteries was proportional to the degree of experimental constriction. Exercise increased the extent of collateral circulation to a very marked amount over and above that due to narrowing alone. Significant collaterals did not develop in the unexercised animals with experimental constriction of the circumflex branch.

The experimental model appeared comparable

to human beings with coronary heart disease limited to one major artery or with severe narrowing of one major artery and limited narrowing of other arteries. Evidence obtained in the study of anastomosis in the hearts of anemic patients also suggests that Eckstein's models are valid for men. It seems, therefore, highly likely that for man as in dogs under conditions of mild arterial narrowing, the myocardium is susceptible to infarction subsequent to sudden vascular occlusion because adequate collateral channels are absent.

The experimental results strongly suggest that during the early stage of the atherosclerotic process, exercise may be of particular value in promoting growth of collateral channels. In-as-much as most American males appear to be in this early and at present invisible stage of the disease, it appears imperative to encourage middle aged men to exercise through a program of exercise falling just short of anginal pain. A collateral circulation may also be developed in patients who have had a recent coronary attack.

While the benefits of certain therapeutic surgical measures such as the modified Vineberg operation may be desirable in certain cases, our attention must not be diverted from corrective measures for heart disease in its earlier stages and ultimately of course in its prevention. One hope is that improved drugs will first control and even eventually prevent the atherosclerotic process. A more distant ideal is for men to adopt early in life patterns of diet, properly conducted exercise, eschewing also smoking that will make surgery and even drugs unnecessary.—L.H.N.

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New Work On The Properties Of Platelets

With the use of isotopic labelling, electron microscopy and technics such as microspectrophotometric measurement of DNA, it has now become possible by Ebbe¹ to show that an as



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yet unrecognized stem cell in the bone marrow produces the megakaryoblast, then the megakaryocyte which then dies in the process of platelet production. This maturation process takes about ten days. The more mature cells of the series can be recognized by the presence within them of multiple or multilobed nuclei. The DNA doubles several times without actual cell division during the development of the megakaryocyte.

Once platelet formation begins, then synthesis of DNA and replication of the nucleus ceases. The signal which tells the cell to stop synthesizing DNA is not known.² If we had knowledge of such a signal it would be of great help in determining the total platelet production. We know that in erythroid precursors that a critical cytoplasmic hemoglobin concentration determines when DNA synthesis and cell division should cease. It would be very helpful if we knew whether the megakaryocyte contains a similarly unique protein whose synthesis by the cytoplasm shuts off DNA synthesis and causes the cell to assume the morphologic characteristics of an immature megakaryocyte.

The signal might be the development of a protein thrombosthenin which is found only in megakaryocytes and also in platelets. In the platelet it is found in its granule and membrane. In the megakaryocyte it only becomes visible once DNA synthesis has ceased. The platelets are formed within its cytoplasmic granules of the megakaryocyte and released to the circulation after the cell sheds its cytoplasm at the end of its life. With the aid of the electron microscope the process of platelet formation can be seen to begin by the formation of microvesicles which coalesce to form a demarcation membrane for the platelet. The platelets liberated do not vary much in size and normally have an average volume of 5.8 c. gamma. They are produced at a rate of 20,000-80,000 per c. mm. per day and their survival in the peripheral circulation varies from seven to ten days. The main site for their destruction appears to be the liver and spleen.

The total mass is not uniformly distributed in the body and about one-third are normally situated in the spleen. Their function as described by Ebbe is to plug vascular defects. This is indicated by adhesion to exposed collagen of an atheroma and aggregation by adenosine diphosphate liberated at this site. They probably also strengthen capillary endothelial cells by becoming incorporated into the cytoplasm of these

cells. In addition to these hemostatic properties, platelets seem to play a role of scavenger in the blood stream much like white cells in general, since they interact in vivo with such particulate matter as viruses, carbon particles and lipid emulsions. Those platelets that are not involved in these processes are destroyed in the reticulo-endothelial system mainly in the spleen and liver after a life of seven to fourteen days.

It is generally agreed that the average platelet level in the blood is between 200,000 and 400,000 per c.mm. The intriguing question is how is this level maintained? Does excess of platelets in some way depress their formation? Is there a hormonal type of control similar to that exercised by erythropoietin on red cell formation and thymosin on lymphocyte production? There are only contradictory results in the literature. However, Ebbe¹ sums up the evidence that "there is indeed a feed-back regulatory system whereby the level of circulatory platelets influence megakaryocytopoiesis. Up to now no platelet regulating hormone analogous to thymosin derived from the thymus has been identified.

If we knew enough about the life cycle of the platelet it would surely lead to improvement in our ability to control the clinical disorders associated with insufficient or excessive platelets in the blood. In idiopathic thrombocytopenia (ITP) most studies support the view that the low count is due to accelerated destruction but not to a defect in platelet formation. One view holds that destruction of platelets in ITP is in part due to an autoantibody in the blood which destroys platelets as rapidly as they are formed in the marrow, but may in fact damage the megakaryocyte directly.¹ This may be the reason why there is variability in the clinical response to steroids. In the patients in whom the mechanism is inoperative and therefore steroids are inoperative, then splenectomy seems indicated.³

Excess of platelets (thrombocythemia) is usually thought to be part of a myeloproliferating disorder which involves also granulocytes and erythrocytes. These three cell groups may have a common stem cell since in chronic myeloid leukemia the abnormal Philadelphia chromosome occurs in erythroblasts, megakaryocytes as well as in granulocytes.⁴

Thus far no evidence has been offered that thrombocythemia can be caused by prolonged survival of platelets. The rise of platelet counts



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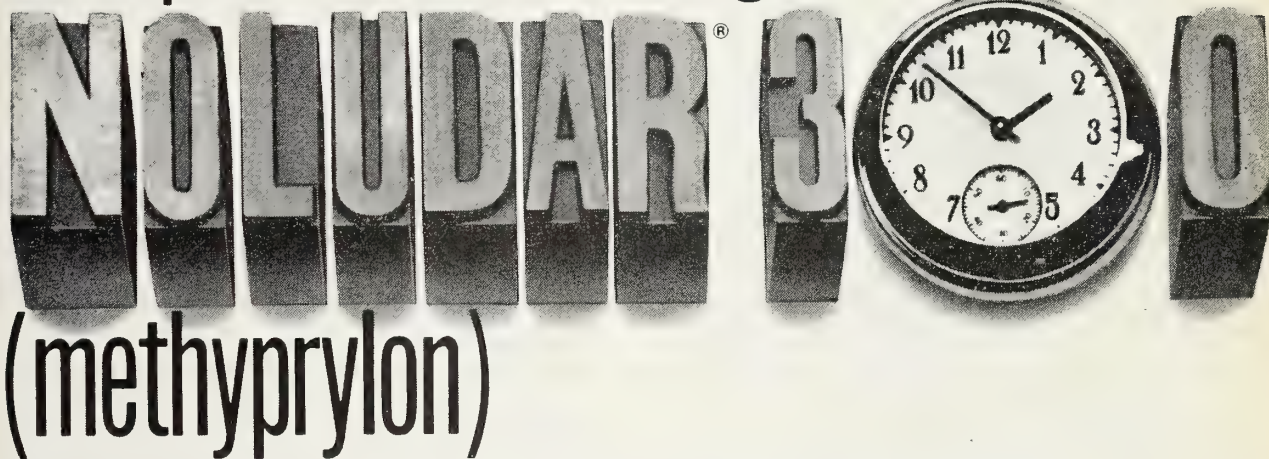
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withdrawal of barbiturates and should be treated in the same fashion. Use caution in administering to individuals known to be addiction-prone or those whose history suggests they may increase the dosage on their own initiative. Repeat prescriptions should be under adequate medical supervision.

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crease hypnotic benefits.

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after splenectomy can be explained simply by removal of the trap which normally holds a third of circulating platelets which now become distributed throughout the whole plasma volume. Apart from ITP and the thrombocytopenias secondary to other blood diseases clinical conditions involving abnormalities of platelets are rare.

Our methods for control of ITP however are hardly satisfactory and that is why clinicians are directly interested in the new work on the properties of platelets.—L.H.N.

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More Light On The Cholesterol Metabolism

The Masai, a nomadic tribe of East Africa, live on a staple diet of milk, meat and blood. The milk contains a fairly high proportion of total lipid, phospholipid and cholesterol. The average daily cholesterol intake varies from 500-2,000 mg. per day, which is distinctly higher than in the U.S.A. where it varies from 300-700 mg. per day. Despite this customary high fat diet the aortas and coronary arteries of the Masai show little atherosclerosis. Serum cholesterol levels are low with an increase in level with advancing age. The serum levels of beta and prebeta lipoproteins are low or absent. Pregnant Masai women show no increase in serum cholesterol levels in the first and second trimester, as compared with non-pregnant levels.

The question thus arose whether the Masai have a basic mechanism that protects them from hypercholesterolemia although their diet is rich in cholesterol and animal fat. Masai students at an agricultural school were divided into two groups and given a basic diet low in saturated fat and free of cholesterol. One group received 2 grams crystalline cholesterol daily with a trace dose of cholesterol 4-C¹⁴ mixed in the basic diet and the other group received only the basic dose of cholesterol 4-C¹⁴ in the diet. The trace dose was discontinued after eight weeks and the decreasing curve of tracer activity

was followed for six months. The amount of cholesterol absorbed synthesized and excreted per day was calculated from weekly blood and stool samples and turnover times and pool size was determined from the total body exchangeable cholesterol.

Despite the daily dose of two grams of cholesterol in the experimental group, the results showed no significant difference between the two groups in serum cholesterol phospholipid triglyceride levels and lipoprotein patterns. The size of the exchangeable body cholesterol pools of the two groups remained constant and the turnover times and turnover rates of body cholesterol were the same. However endogenous synthesis of cholesterol in the experimental groups was about half that in the control group. The investigators concluded that this suppression of synthesis of cholesterol by the feeding of cholesterol compensated perfectly for the influx of dietary cholesterol absorbed from the intestine and that this was the only homeostatic mechanism which protects the Masai from the development of hypercholesterolemia.

The study also shows unusual serum protein patterns in the Masai with levels of IgA almost twice as high as in American whites and reached early in life. In studies on gall-bladder bile, the Masai also showed patterns very different from many white groups with a high ratio of phospholipid to cholesterol and bile acids to cholesterol. The authors concluded that the gallbladder bile of Masai has an enormous reserve capacity to dissolve cholesterol and that this system protects them from cholesterol gallstone formation. We have then what seems like a long term biological adaptation genetically determined.

The study of the Masai is part of a long continued debate about the fundamental aspects of cholesterol metabolism. In dogs, Gould in 1950 found that a compensatory suppression of newly synthesized cholesterol in the liver and plasma when the animal ingested a high cholesterol diet and others subsequently found a similar homeostatic mechanism in the rat. The next year, Gould proposed a hypothesis of quantitative human cholesterol metabolism from which there arose two general concepts. First, that the human liver probably synthesizes up to 1.5 grams of cholesterol daily and second, that the human liver can suppress endogenous synthesis of cholesterol and thereby compensate for about 1.5 grams of dietary cholesterol per day.

In contrast to white people in this country who have a maximal absorption capacity of only 0.3 gram cholesterol per day, the Masai can absorb more than 0.6 gram cholesterol. The white people in the U.S. can only suppress 25 percent of synthesis of cholesterol in the body whereas the Masai can suppress 50 percent of their endogenous cholesterol synthesis. Clearly the Masai have unique biological characteristics which are genetically determined and which keeps their serum cholesterol low.

It is understandable why saturated fat intake in our diet is not fully absorbed and when it is absorbed it does not suppress cholesterol synthesis and why the serum cholesterol problem is a lot more complicated than the diet alone.—L.H.N.

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Some Misconceptions In

Electrocardiographic Interpretation

In Science the thing is to modify and change one's ideas as Science Advances.
—Claude Bernard.

It is firmly established that the electrocardiogram (ECG) is indispensable in clinical practice. It provides information about the heart which cannot be obtained in any other way. It is indispensable in the evaluation of the cardiac status. In addition it often provides clues to the recognition of numerous disorders which are not primarily of cardiac origin. Because of the widespread use of the instrument by the profession certain misconceptions have developed about what one can learn from the ECG which need clarification in order to make the ECG of maximum value in clinical medicine.

It needs to be emphasized that the area of technic in obtaining the electrocardiogram is important to make the record truly valuable. To obtain a valid and readable record the electrode surfaces, the lead wire tips must be clean and the surface to which they are applied free of sweat and oil. The lead application must be correct and the wires not reversed and the spots on the chest from which the leads are recorded must always be the same. There should always be at least a

six inch strip of record to permit evaluation of rhythm disorders. The patient should not be uncomfortable and the record repeated if there are artefacts to obscure the record.

Misconception one: What the ECG can do—Often requisitions are submitted especially in pre-operative patients with the only data "Rule out heart disease". The fact is the ECG is not a doctor. It cannot substitute for the conventional data derived from history taking, physical examination, clinical cardiac diagnoses, estimation of functional capacity or conjectures about prognosis. The ECG cannot rule out heart disease. It can only rule it in.

Misconception II: The events taking place in a single myocardial cell membrane of depolarization and repolarization are what we see in the ECG. The fact is that there is a wide gap between depolarization and repolarization in an individual cell membrane and the ECG. When we record an ECG we are tapping the potential lines on the surface of the body. These lines are the result of currents generated in the heart which are then conducted to the surface. The heart is a very complex source of current because the muscle fibers in the four muscle bundles run in three dimensional space. As a result there is much cancellation of current and in each lead there are "silent" areas although these vary from one lead to another. There are electrically "silent" areas which are not represented in any lead. These are the subendocardial lamellae and much of the intramyocardial fibers.¹ It is important to be informed of the "silent" areas of each lead and in all leads.

Misconception III: There is truly a cardiac "vector" and that it is this vector which is responsible for the configuration of waves in each lead. The fact is that the surface field has been mapped² and the line joining the true negative and positive pole is far away from a "vector" which is derived mathematically from leads by the Einthoven equation. The vector is not a useful concept.

Misconception IV: The QRS represents spread of excitation through the ventricle. This is true only indirectly. The potentials produced by the spread of excitation through the conduction system are of too low an order to be picked up in the surface field. What we are really recording is the sequence of depolarization and repolarization of large masses of right and left ventricular surfaces. These depolarize asynchronously be-

cause the arrival of the stimulus to the surface of the right and left ventricle is asynchronous.

Misconception V: The R wave of the precordial leads represents spread of excitation from the endocardium to overlying epicardium under the electrode. The assumption is further that the electrode is in the positive field as the wave of excitation spreads outward. The fact is that the spread of excitation from endocardium to epicardium may not be direct but even if it is, it would be of an order of less than 2 ms. which is too fast to be recorded by the present electrocardiograph.

Misconception VI: During the ST segment the heart is totally depolarized. It is what Lewis called "possession". Accordingly if this segment is elevated or depressed this represents an abnormality in the heart. The fact is that repolarization begins immediately after depolarization advances first slowly and then more rapidly. The ST segment may or may not represent abnormal repolarization.

Misconception VII: Positivity of T in the precordial leads represents variability in the rate of repolarization, the endocardial layers repolarizing more slowly than the overlying epicardial layers. The fact is as we have seen above, the endocardial layers are electrically "silent". The positivity of T in precordial leads is due to more rapid repolarization of the apical and inferior surfaces than the rest of the heart surfaces whose temperatures are 0.25-.5°C less than that of the apical regions. The positive T can be inverted by applying cold to this area.

Misconception VIII: The "Q wave of infarction" always represents infarction past or present. The fact is that as Nahum has pointed out³ that some young normal people can show this pattern and he warned against using the ECG as a final judge of the condition of the heart. He pointed out further that even in illness the pattern can occur when the disease is general or below the diaphragm or cerebral in origin. Normal ECGs may be found in persons who had recovered from an infarct.

Misconception IX: Non-specific changes mean "unimportant". The fact is that it is in this part of an ECG interpretation where clues to the recognition of numerous disorders can be obtained which are both of cardiac and non-cardiac origin. Inverted T waves are "non specific" but they are hardly unimportant for they are found

in infarction, electrolyte disorders, metabolic, coronary and cerebral disorders as well as in inflammation below the diaphragm and as a consequence of the action of certain drugs. It is unlikely that every flattened or inverted T wave represents heart disease. Fulminating infections, hemorrhage, nutritional disturbances, shock and metabolic derangements can produce abnormal tracings although on recovery the patient can be normal and also the ECG.

Misconception X: Confusion between semantics and physiology. Certain terms have crept into electrocardiographic interpretation which do not say what the ECG really tells us. One is sub-endocardial infarction. We have seen above the subendocardium is electrically silent. "Strain" is another term which connotes mechanical not electrical events. To be sure there are times when the ventricles are overloaded and dilated and are associated with an electrocardiographic pattern but the pattern does not connote "strain" but dilatation and altered repolarization when the right or left ventricles are overloaded. Hypertrophy is an anatomical term. Thus a particular ECG pattern is often found in hypertrophy but the pattern results from delay in depolarization and at times repolarization of the surfaces of the right or left ventricle. Finally is the term "ischemia". This term is loosely used to connote a state in the myocardium which is supposed to be due to insufficient oxygen supply to a whole or a part of a ventricle. Actually the pattern misnamed ischemia can be caused by a variety of factors not necessarily of cardiac origin. It is unlikely that every flattened or inverted T represents heart disease as noted above.

In defense of the ECG many individuals with unsuspected heart disease have it first detected by the ECG and are thus protected from living with an unrecognized disorder. Once misconceptions are cleared away the ECG reader may greatly stimulate the physician if his logic is clear. He can then suggest clinical conditions which may be suggested by an abnormality. Many come to mind such as hyperparathyroidism, myxedema, aldosteronism, uremia, electrolyte disturbances, digitalis intoxication, pericarditis, alcoholism, intracranial disease, cor pulmonale and much else beside the usual standbys.

In subsequent issues of this journal there will appear articles on the theory of the electrocardiogram that should help clarify some of the

misconceptions mentioned above as well as others to come and thus clear the way to a physiologic approach to ECG interpretation.—L.H.N.

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Some Notes on Diet In The Management Of Diabetics

Since oral hypoglycemic agents have been associated with an increased risk of cardiovascular mortality in maturity-onset diabetics (*Medical Letter*, Vol. 12, p. 97, 1970), physicians are relying more on diet in treating such patients. All diabetics must be careful of their diets, some to avoid the need for insulin and others, who require insulin, to avoid hypoglycemia.

Weight Control

Correction of obesity is a universally accepted dietary recommendation for diabetics. Most maturity-onset diabetics are overweight and weight reduction is the only therapy that many need to control symptoms. Whether asymptomatic hyperglycemia should be corrected is controversial. Overweight patients should reduce caloric intake sufficiently to induce a satisfactory rate of weight loss, but a starvation diet should be avoided. With weight reduction, carbohydrate tolerance is likely to improve and glycosuria disappear. Continued glycosuria after obesity has been corrected, when accompanied by excessive urination or excessive thirst, indicates that the diabetes is too severe to be treated by diet alone.

Carbohydrate Requirement

For most patients, an acceptable daily diet must contain at least 200 Gm of carbohydrate, and there is usually no need to reduce carbohydrate intake below this level.

Many physicians use diets in which fat and carbohydrate contribute equally to total calories (40% as carbohydrates, 40% as fat, and 20% as protein), although many *Medical Letter* consultants prefer a

diet lower in fat. Protein contributes to the carbohydrate pool, but it is usually not necessary to restrict its intake to measured amounts.

Adherence to any diet is often poor, but it is likely to be better if the diet is not unduly rigid with respect to carbohydrates, including occasional sweets, and if it takes into account the preferences of the patient. Especially in juvenile, insulin-dependent diabetics, control may be achieved more easily with a fairly liberal carbohydrate intake than with a rigidly restricted one. On the other hand, unrestricted carbohydrate intake, sometimes advocated for diabetics, may increase insulin requirements and provoke symptomatic hyperglycemia and glycosuria. Excessive carbohydrate intake can also raise blood levels of triglycerides excessively in some patients (*Medical Letter*, Vol. 12, p. 43, 1970).

Snacks

Patients on insulin often require snacks mid-morning, at bed-time and at times of marked physical activity. To avoid the risk of hypoglycemic reactions, which can be especially dangerous for patients with coronary artery or cerebrovascular disease, the size and timing of snacks must be adjusted to the need of the individual patient, which depend, among other things, on the type and dosage of insulin.

Dietary Fat

The hope that insulin would prevent the serious vascular complications of diabetes was long ago abandoned; whether restriction of the amount and the type of fat in the diet will help prevent vascular complications is a matter of controversy. Diets low in total fat, saturated fatty acids and in cholesterol help reduce high blood cholesterol, but there is no conclusive evidence that such diets help control atheroma and arteriosclerotic complications in persons without familial hyperlipidemia. Whether restriction of fats, except as needed for weight control, have any special advantage for diabetics is not known.

Conclusion

Clinicians agree on the importance of having diabetic patients achieve and maintain normal weight if they are overweight. There is less agreement as to how much carbohydrate restriction is necessary. Most *Medical Letter* consultants believe that rigid dietary control of mild hyperglycemia or glycosuria is not necessary.

Reprinted from The Medical Letter on Drugs and Therapeutics, New York, N.Y., Vol. 13, No. 14, July 9, 1971.

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Scientific Activities

SUMMARY OF ACTIONS

Wednesday, September 15, 1971

I. Attendance

Present in addition to the Chairman, Dr. K. F. Brandon, and the Vice-Chairman, Dr. D. A. Grendon, were: Drs. Weber, Jr., Cramer, Spitz, Backhus, Nolan, Granoff, Fabro, Hess, Bradley, Rem. Johnson, Ragland, Jr., Harwood, Pelz, Wilson, Roch, Nemoitin, Van Syckle, Friedberg, Harkins, LaBella, Root, Jr., Freedman, vonGlahn, Dambeck and Klare.

Also present were: Mrs. Lindquist; Dr. Robert U. Massey, Acting Dean, UConn. Medical School; Mr. Bugan (AMA); Mr. Olson (FCMA); Mr. Tomat; Mr. Sullivan; and Dr. Richards.

Absent were: Drs. Dean, Gardner, Luby and Palomba.

II. Routine Business

Approval of Minutes

As printed and distributed, it was VOTED to approve the minutes of the meeting of August 19, 1971.

Life Memberships

It was VOTED to approve applications for Life Membership received from the following eligible Active Members:

Henry Archambault, 120 Lafayette Street, Norwich (NLMA)—1/1/72

Morton H. Chapnick, 30 Gilman Street, Putnam (WCMA)—1/1/71

Norman A. Cameron, 4155 La Cadena, Tucson, Arizona (NHCMA)—1/1/72

Lindo P. DiFrancesco, 65 South Street, Stamford (FCMA)—1/1/72

Sidney M. Gardner, 172 Curtis Terrace, Fairfield (FCMA)—1/1/72

John M. Renahan, 1 Kingston Street, Ansonia (NHCMA)—1/1/71

Election of Student Members

It was VOTED to elect to Student Membership two Connecticut residents enrolled at American medical schools as follows:

James J. Hill, Jr., 224 Washington Street, Norwich, Georgetown School of Medicine, Class of 1974, Pre-Med: Georgetown College of Arts & Sciences; Parent: James J. Hill, Sr.

Carl W. Perkins, III, 89 Newton Street, Norwich, St. Louis University, Class of 1974, Pre-Med: Clark University; Parent: Carl W. Perkins, Jr.

III. Old, New and Special Business

Reports of the Fiscal Committee

It was VOTED to act on a series of recommendations of the Fiscal Committee as follows:

- (a) *"Dutch Treat" Libation Policy*: To rescind this policy (implemented 1/1/71) the libations may not be charged to the Society and to permit such charges to be made to the Society, effective immediately. Further, to remind all committee chairmen that the primary purpose of meetings is to transact the work of the committees and that social aspects of meetings (food and drink) should be considered as only adjunctive and for convenience. Pursuant to this latter "reminder", committee chairmen are to be apprised that buffet-type meetings at the Society's headquarters building have been proven satisfying and productive by a number of committees, and that arrangements for buffet service can be made through the CSMS staff.
- (b) *Proposal for "CSMS Financial Assistance Fund" at Yale and UConn Medical Schools*: To approve the plan proposed by the Committee on Cooperation with the Medical Schools of Connecticut, which, in brief, would establish such an Assistance Fund at each of the medical schools in the amount of \$3,000 on a pilot, one-year basis, the fund to be administered by medical school officials as financial aid loans (not to exceed \$500) to enrolled medical students on the basis of need. Further, to refer to the Fiscal Committee the question of how the project is to be funded (out of reserves or by member assessment) and to di-

rect the Fiscal Committee to include the required \$6,000 as an identifiable item in the budget for 1972 and to make recommendations as to the funding of same. Further, to disapprove the designation of loan recipients as "CSMS Scholars" and to delete other sections of the Committee on Cooperation's report which had to do with formal liaison between such recipients and representatives of the Society and with repayment of loans in the event of death or disability of recipients.

Pending receipt of a report of the Fiscal Committee (in association with the 1972 budget) regarding the funding of this project, the Council will prepare and submit to the November semi-annual meeting of the House of Delegates a comprehensive report on this proposal with recommendation for approval by the House.

Report—Delegate to the Medical Society of New Jersey

It was VOTED to receive for filing, and with thanks, a report filed by E. Tremain Bradley, CSMS Delegate to MSNJ, on his attendance at the 205th Annual Meeting of MSNJ, Atlantic City, May 15-19, 1971. Following a discussion of whether the CSMS Bylaws should be changed to provide for a Delegate and Alternate Delegate (instead of two Delegates) to the five other New England state societies, New York and New Jersey, it was VOTED *not* to advocate such change at this time.

Communication—Chairman of Hospital Staff Medical Board

It was VOTED to receive for filing, and with thanks, a communication received from the Chairman of the Medical Board of a hospital at which the Judicial Committee had made inquiry concerning the allegation of a staff member that he was being denied promotion to Attending Staff status without being apprised of the reasons for such denial. In brief, the communication stated that both the Medical Board and the plaintiff physician would be apprised of the subject reasons and that it was expected that "the matter will be completed . . . to everyone's satisfaction".

Request for Opinion—Lieutenant-Governor Hull

The Lt.-Governor submitted a news report from an Augusta, Maine newspaper which stated that the next session of the Maine legislature would be asked to consider bills providing for the treatment of emergency cases (such as coronary occlusions) by ambulance attendants who would transmit data

to and receive treatment instructions from a hospital based physician via two-way radio. He requested CSMS opinion as to whether this sort of program had merit and whether he should initiate similar legislation at the Hartford level. Edward A. Rem, Norwalk, and others apprised the Council of considerable progress already being made in Connecticut to establish this type of program, and it was VOTED to request Dr. Rem to communicate with the Lieutenant-Governor concerning this progress and to offer to furnish him with such further subject information as he might request. The Executive Director will respond to Mr. Hull's communication and advise him that Dr. Rem will write to him as indicated.

N.B.: *The foregoing is a summary of the proceedings and action of the Council on September 15, 1971. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by an interested member of the Society.*

In Memoriam

Gaylord, Charles William, Yale Medical School, 1915. Dr. Gaylord was a general practitioner in the New Haven area since 1916. He was a U.S. Army veteran of World War I, and was a member of the New Haven County Medical Association, the Connecticut State Medical Society and the American Medical Association. Dr. Gaylord died September 16, 1971, at the age of 82.

Rosenthal, Ernest, University of Berlin, 1925. Dr. Rosenthal was an ophthalmologist in the Hartford area since 1937. He was on the courtesy staffs of Hartford Hospital, St. Francis Hospital and Mt. Sinai Hospital. He was a member of the Connecticut State Medical Society and the American Medical Association. Dr. Rosenthal died September 27, 1971, at the age of 73.

Sellew, Robert C., Yale University, 1932; Harvard & Long Island College of Medicine, 1936. During World War II he served with a medical unit attached to artillery battalion in Africa, Europe and the Mid-East. He separated from the service with the rank of captain. Dr. Sellew lived in Canaan most of his life and was the town's last resident physician. He died September 1, 1971, at the age of 63.

Placement Wanted

Allergy—51 years of age, Certified, wishes solo, group, associate and industrial type practice in a medium or small size community in Connecticut. Would consider doing some general medicine with emphasis on Allergy. Connecticut license. Available immediately.

Allergy-Internal Medicine—32 years of age, Eligible with National Boards, wishes solo, group, associate or institutional type practice in a large or medium size community in Connecticut. Connecticut license. Contact Robert E. Weinstein, M.D., Department of Allergy, Henry Ford Hospital, Detroit, Michigan.

General Practice—36 years of age, wishes group, associate, solo, industrial and institutional (in that order) practice in a medium, large or small size community in Connecticut. Would consider doing minor surgery according to training. Available immediately. Contact: SchueYuan Liao, M.D., 507 Hawkeye Court, Iowa City, Iowa 52240.

Internal Medicine—34 years of age, Eligible with National Boards, wishes solo or associate type practice in Connecticut, in a medium size community. Connecticut license. Available immediately.

Internal Medicine—31 years of age, Certified, wishes group type practice in a medium size community in Connecticut. Available immediately.

Internal Medicine—29 years of age, National Boards, wishes group, associate or institutional type practice in Connecticut. Presently in practice. Military obligation completed. Available immediately.

Internal Medicine-Cardiology—34 years of age, Eligible, wishes institutional type practice in a medium size community in Connecticut. Available immediately. Contact: Abnash C. Jain, M.D., 1926 W. Harrison, Apt. #1002, Chicago, Illinois 60612.

Internal Medicine—32 years of age, Certified with National Boards, wishes group or associate type practice in a medium size community in Connecticut. Connecticut license. Available immediately. Contact: J. Peter Lawler, M.D., Box 192, Naval Hospital, Portsmouth, Virginia 23708.

Neurology—41 years of age, wishes solo, group, or associate type practice in a medium or small community in Connecticut. Available immediately. Contact: George J. Vakkur, M.D., 2375 Terwood Drive, Huntingdon Valley, Pennsylvania 19006.

Obstetrics and Gynecology—36 years of age, Eligible, wishes solo, group or institutional type practice in a medium size community in Connecticut. Presently in practice. Connecticut license. Available immediately.

Orthopedic Surgery—34 years of age, Eligible, wishes associate type practice in Connecticut. Special training in spine and hand surgery. Available immediately.

Orthopedics—36 years of age, Eligible with National Boards, wishes associate or institutional type practice in a medium size community in Connecticut. Also interested in academic position with special interest in Biomechanics. Available immediately.

Orthopedics—31 years of age, Eligible, wishes associate type practice in a large or medium size community in Southern

Connecticut. Available immediately. Contact: Jeffrey S. Malka, M.D., 3225B Johnson Avenue, Riverdale, New York 10463.

Otolaryngology—32 years of age, Certified with National Boards, wishes solo, group, associate or institutional type practice in a large community in Connecticut. Available immediately. Contact: Melvin J. Gunsberg, M.D., Box E, DeWitt Army Hospital, Fort Belvoir, Virginia 22060.

Otolaryngology—32 years of age, Eligible with National Boards, wishes group or associate type practice in a medium size community in Connecticut. Major interests are in: Facial Plastic Otolaryngology but can and will do all aspects of the specialty. Available immediately. Contact: Alvin D. Oscar, M.D., 4419 Royal Oak Court, Columbus, Georgia 31907.

Pediatrics-Hematology—35 years of age, Eligible, wishes solo, group or institutional type practice in a medium size community in Connecticut. Available immediately. Contact: Chi-Yen Kuo, M.D., 20 St. Paulis Court, Apt. 1D, Brooklyn, New York 11226.

Pediatrics—29 years of age, Eligible with National Boards, wishes group or associate type practice in a large or medium size community in Connecticut. Available immediately. Contact: Jerald L. Zarin, M.D., 3D Collins Street, Westover AFB, Massachusetts 01022.

Psychiatry—33 years of age, Certified with National Boards, wishes to locate in Connecticut. Presently in practice. Applied for Connecticut license. Available immediately. Contact: Charles F. Rich, Jr., M.D., Box 146, USAF Hospital, Chanute Air Force Base, Illinois 61866.

General Surgery—37 years of age, Eligible, wishes solo or associate type practice in a medium size community in Connecticut. Available immediately. Contact: Robert J. Andrews, M.D., 2 Mechanic Street, Marblehead, Massachusetts 01945.

Surgery—48 years of age, presently in practice, wishes solo or associate type practice in a medium size community in Connecticut. Available immediately. Contact: James A. Cline, M.D., 2917 Tomahawk Drive, Rapid City, South Dakota 57701.

General Surgery and Cardiovascular-Thoracic—39 years of age, Certified (General Surgery) Eligible (Thoracic Surgery), wishes solo, group, associate or institutional type practice in a large or medium size community in Connecticut. Presently in practice. Connecticut license. Available immediately.

Surgery—37 years of age, Certified, wishes solo, group, associate, or institutional type practice in a large or medium size community in Connecticut. Presently in practice. Available immediately. Contact: A. K. Patel, M.D., Box 70, Inverness, Nova Scotia, Canada.

Surgery—35 years of age, wishes group or associate type practice in a large or medium size community in Connecticut. Available immediately. Contact: Pramod Shinghal, M.D., 115 Town Square Drive, Newport News, Virginia 23607.

Urology—36 years of age, Eligible, wishes group, associate or institutional type practice in Connecticut. Available immediately.

ANYONE INTERESTED IN THE ABOVE IS ASKED TO CONTACT THE PHYSICIANS PLACEMENT SERVICE, 160 ST. RONAN STREET, NEW HAVEN, CONNECTICUT 06511.

Medical Care in New Haven—1971

Morris A. Granoff, M.D., MPH

The New Haven area has been described as the "test tube" of the (Medical Care) planners (Connecticut Medicine, 1970) and also as a possible "battleground" for private medical practice (Connecticut Medicine, 1970). The reason for these statements is that for several years the planners have been attempting to install in New Haven their pet method of providing medical care, the Pre-Paid Group Clinic. They attempted through the CDAP (Community Development Action Plan) Report to eliminate private practice by replacing it with 5 Community operated Group Practice Clinics. Although this was unsuccessful, they have had other successes. By October 1, there will be three Pre-Paid Group Clinics in operation, each planning to care for up to 30,000 people (up to 90,000 people in all) in an area with a population of 200,000-250,000 depending on how far from New Haven one draws the arc.

For the past 2 years the Hill Health Center, which is federally funded (Title V-Children's Bureau), has provided free medical care to the residents of the Hill, a low income area, who are under 21 years of age. The Center hopes to expand its operation in the future to include all age groups. From what one can learn, an attempt is being made to provide high quality care. However, because of conditions peculiar to the population served, the per patient cost and the incidence of broken appointments has been reported as high.

On July 1, the Yale University Health Center opened its doors. It provides comprehensive care to students, faculty, and employees and their families. The students will have the charge for the service included in their tuition. The faculty and employees can choose to join the plan or not. For those that join the University will pay approximately $\frac{2}{3}$ of the cost.

The Community Health Center Plan (CHCP), will open its doors on October 4. This group is sponsored by the labor unions and has had federal grants of a substantial amount for planning and research. It also will provide comprehensive care. It has been engaged in an active enrollment

campaign among employed workers. The charge to the worker over and above what the employer is paying for Blue Cross and Blue Shield on his behalf is small. Public acceptance, in spite of an intensive enrollment campaign, is reported as variable. There is much of a "wait and see" attitude on the part of the eligible group. While originally directed toward the union member, it is now planned to solicit enrollment from City and State employee groups and to accept a certain number of welfare beneficiaries. At the present time it is impossible to predict what the impact of these groups will be on the practice of medicine in New Haven. Since the full-time faculty of the Yale Medical School, Yale New Haven Hospital will provide the back-up services for the groups, physicians in certain specialties will be affected, particularly surgeons. On the other hand, several physicians have left private practice and taken employment with a group. Others have signed contracts for part-time employment by a group. Under these circumstances one can only "wait and see" what effect these ventures will have on the private practice of medicine and the delivery of medical care in New Haven.

In their promotion and enrollment campaign, the groups, particularly the CHCP, mention home visits and home health care when medically indicated. When questioned on this score at a meeting of the New Haven Medical Association this past spring, the Executive Director of CHCP, I. S. Falk, Ph.D., indicated that the patient might be brought to the clinic, if necessary by ambulance, in cases of emergency. Since the CHCP invites enrollment from towns as far away as Ansonia, Shelton and Wallingford which are 10-15 miles from the center of New Haven, one wonders how it proposes to provide home visits in these areas.

Like all Pre-Paid Groups these plans offer the subscriber the choice of a primary physician employed by the plan. How meaningful this choice is will depend on the number of physicians. At present the Yale group offers the subscriber one obstetrician. Since the Yale Medical School Yale New Haven Hospital provides the back-up for

these plans the question may be rightly asked who will perform the surgery. Will it be an intern, assistant resident, resident or attending? If it is not the latter, will he be in the operating room throughout the entire operation. Furthermore, what is the subscriber being told in this regard? The latter question is very pertinent because the services provided should not be misrepresented.

Among the advantages claimed by these plans is "Preventive Care". This is commonly bandied about to give the impression that human illness will be prevented. Yes, we can protect people against certain communicable diseases and we can perhaps delay the development of some of the late effects of certain disorders, but we cannot prevent Hypertension, Diabetes, Cancer, etc. Numerous studies have shown that the poor have a higher incidence of many diseases, including mental disorders, than the more affluent. Whether this is due to poor housing, malnutrition, etc. or a combination of factors is unclear. Yet we constantly hear of Preventive Care.

Another purported advantage of this type of Medical Care is reduced hospitalization. This may have been valid in the past when the statistics used to prove this point were collected. However, in New Haven, in 1971, with the bed situation what it is this is hardly tenable. The author recently had to wait 5 days before he could admit a patient with advanced Hepatic Cirrhosis, ascites, and peripheral edema. One has only to visit the Medical Service at the Memorial Unit of the Yale New Haven Hospital to appreciate how few of these patients could be adequately treated outside the hospital. The diagnostic admission that a group clinic could prevent is a thing of the past in 1971.

In the economic area there is no question of the advantages of this type of care for the patient. It is cheaper than what private practice can offer. However, it is being subsidized in one way or another. The buildings are tax-free and their cost has been subsidized in part or full by outside sources. This the private practitioner cannot compete with economically. Further the profits and/or the administrative costs of Blue Cross/Blue Shield or private insurance are being diverted to the group clinic.

Time will tell whether the people of New Haven will choose this type of medical care. In the past 20-30% of a population area have chosen this type of care voluntarily. It will be interesting to see what proportion of the residents in this area make this choice.

Placement Opportunities

Physician for Emergency Room Duty—Splendid opportunity for qualified physician to work with medical group to provide around-the-clock coverage in Emergency Department for accredited General Hospital of 325 beds and modern supporting services. New England university town, two hour drive to New York and Boston. Hospital serves population of 125,000. Educational affiliation with university medical school. Liberal contract. Send curriculum vitae to Connecticut State Medical Society Placement Service, 160 St. Ronan Street, New Haven, Connecticut 06511.

General Medicine—Opportunity in Connecticut shore community few miles from New Haven. Fully established practice. Office equipped for electro-cardiography and x-ray. Contact Mrs. Michael J. Carpinella, 48 Kirkland Street, Branford, Connecticut (1-203-488-3557).

General Practice—Excellent location for general practice. Servicing 12 to 15 thousand people. Rural setting between Fairfield County, New Haven and New York. 10 miles from Norwalk and Danbury Hospitals.

General Practice—Two-man partnership in General Practice in 19,000 population community needs third man. Excellent opportunity at this time. Two other doctors in town retiring. Contact: Cheshire Medical Group, Cheshire, Connecticut.

General Practitioner Preferred—Will involve travel to medicare facilities and review patient care standards. Travel to 30% nationally in one-two week spans. Salary to \$30,000. Fee Paid. Contact: F-O-R-T-U-N-E Personnel, 60 Washington Street, Hartford, 547-0900.

Orthopedic Surgeon for Affiliation—in well established private practice in Connecticut. Arrangements open to discussion.

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the quality of survival

With the steady improvement in the therapy of cancer, and consequent increase in the number of 5-year survivals, our programs reflect increasing concern with the future of the cancer patient—with the *quality* of his survival.

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by the Society, the International Association of Laryngectomees, through its local IAL clubs, provides such services as individual and group speech therapy, psychological counseling, visits to new patients, safety training, public education and social activities.

Our rehabilitation programs not only give heart and help to patients but provide the physician with vital aids necessary to improve the *quality* of survival.

American Cancer Society



Electrocardiogram of the Month:

Rate-Dependent Bundle Branch Block

Yale-New Haven Hospital
New Haven, Connecticut

Prepared by
HYMAN M. CHERNOFF, M.D.
Associate Professor of Clinical Medicine,
Yale School of Medicine
Director, Dept. of Electrocardiography
Memorial Unit, Yale-New Haven Hospital

Normally the total I-V conduction time is in the range of 0.06 to 0.10 sec. When disease has blocked conduction in either the right or left bundle branch, the supraventricular impulse reaches one ventricle rapidly via conduction through the unimpaired bundle and then spreads more slowly to the opposite ventricle. In such instances the I-V conduction time is prolonged to 0.12 sec. or more. There are times, particularly in the presence of ischemic

heart disease, when the recovery period of one main bundle branch is merely prolonged so that conduction through this bundle branch may be normal at slow heart rates, but impaired when the heart rate increases above a critical value. Since the heart rate in such a patient may rise above or fall below this critical value one can observe even in a single lead ventricular beats with normal I-V conduction, slightly delayed conduction in one bundle branch,

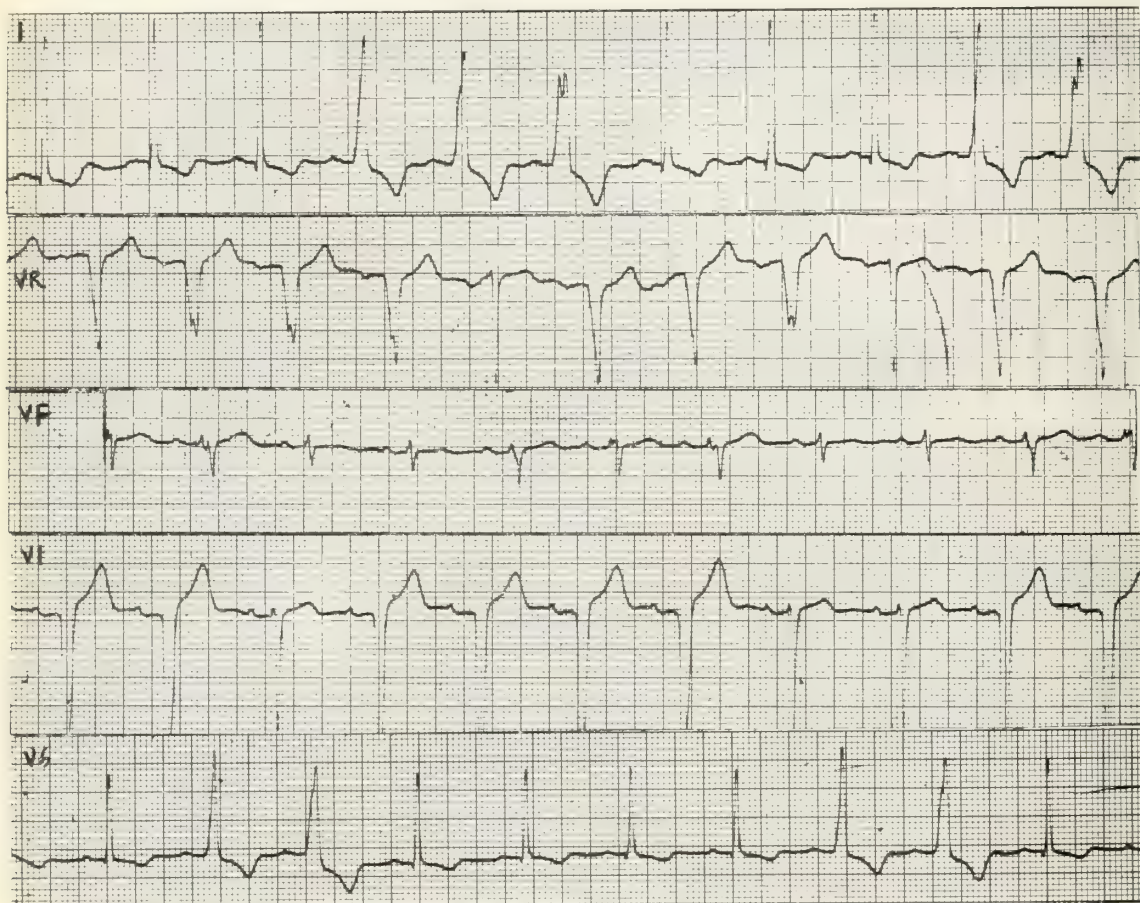


Figure 1

The rhythm is sinus. The rate varies from 79-86 per minute and is related to respiration. Whenever the P-P intervals measure 18-19 mm. (sinus rate of 79-83/min.) the I-V conduction time is normal (0.08 sec.). The tall QRS complexes represent the presence of left ventricular hypertrophy. When the P-P intervals shorten to 17.5 mm. (sinus rate of 86/min.) the I-V conduction time is initially prolonged to 0.10 sec. and then to 0.12 sec., exhibiting first slight delay in conduction in the left bundle branch and then LBBB. In this patient the critical rate for normal I-V conduction is below 86 per minute.

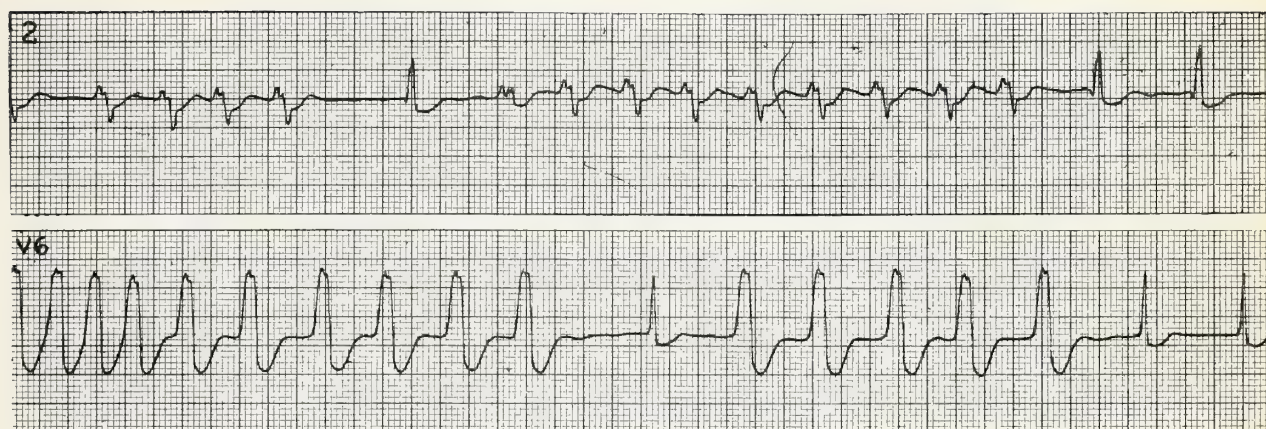


Figure 2

The rhythm is atrial fibrillation with varying R-R intervals, ranging from 6.5 to 23.5 mm. (ventricular rate ranging from 64 to 230/min.). When R-R intervals measure 16.0 mm. or more (ventricular rate of 94 or less) the I-V conduction time is normal (0.08 sec.). When the R-R intervals measure 13.5 mm. or less (ventricular rate of 111 or higher) the ventricular beats exhibit the patterns of LBBB. The critical rate for development of LBBB in this patient is between 94 and 111 per minute.

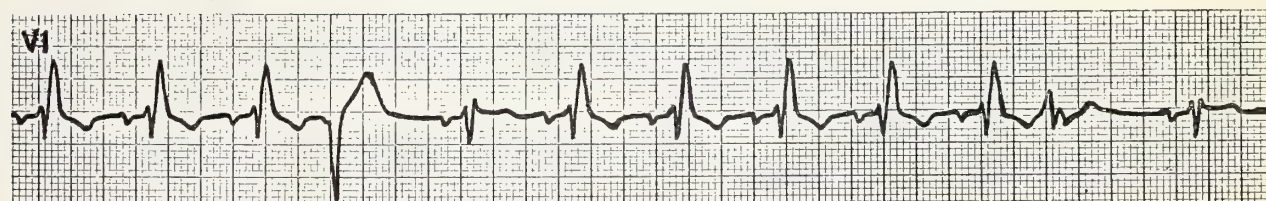


Figure 3

The basic rhythm is sinus with rate of 94/min. The QRS complexes measure 0.12 sec. with patterns of RBBB. The 4th and 11th beats are premature ventricular beats arising from separate foci. They are each followed by a full compensatory pause which is long enough to allow for a greater degree of recovery in the right bundle branch so that the oncoming sinus impulse is more normally conducted (QRS interval of 0.10 sec.). The R-R interval between the VPC and the more normal conducted sinus beat measures 22 mm (0.88 sec.). In this patient RBBB is present when the sinus rate is 94/min., but conduction in the right bundle improves when the heart rate is down to 69/min. (R-R interval of 0.88 sec.).

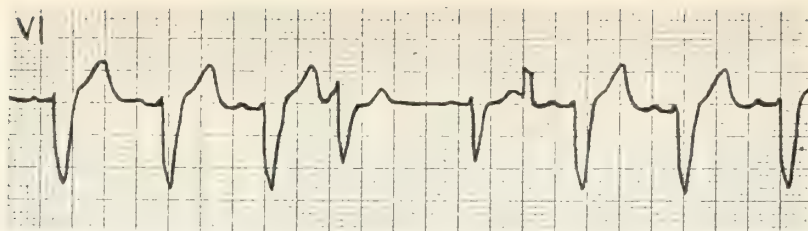


Figure 4

The basic rhythm is sinus with rate of 94/min. The QRS complexes measure 0.14 sec. with patterns of LBBB. The fourth beat is a premature ventricular beat followed by a compensatory pause. This delay permits full recovery of conduction in the left bundle branch so that the oncoming sinus beat is normally conducted (QRS interval of 0.10 sec.). The R-R interval between the VPC and the normally conducted sinus impulse measures 22 mm. (0.88 sec.). In this patient LBBB is present when the sinus rate is 94/min., but is absent when the heart rate is 69/min. (R-R interval of 0.88 sec.).

or complete block in one bundle branch, depending upon the time interval between successive beats.

Below are several examples of rate-dependent bundle branch block:

These records make clear that block in I-V conduction may be rate dependent and that the change in configuration and duration of ventricular complexes should not be mistaken for the presence of an ectopic ventricular rhythm.

NOTICE TO CONTRIBUTORS

Members of The Connecticut State Medical Society reading papers before other organizations are requested to submit their papers to the JOURNAL for consideration by the Board of Editors for publication. Detailed instructions to contributors appear in the last section of *Connecticut Medicine*. Adherence to the instructions will prevent delays both in acceptance and in publication.

Please send them to:

Louis H. Nahum, M.D., Editor
Connecticut Medicine
 160 St. Ronan Street
 New Haven, Connecticut 06511

Letters To The Editor

Members of the Society are invited to communicate with the Editor of CONNECTICUT MEDICINE expressing their opinions or giving information as to any matter of interest to the members. The Editorial Board reserves to itself the right to select the communications or excerpts therefrom that will be published and to reject others. As with other material which is submitted for publication, all correspondence will be subject to the usual editing and possible abridgment. Material should be typewritten double spaced, and be of reasonable length (not over 1½-2 pages). Address all correspondence to: THE EDITOR, CONNECTICUT MEDICINE, 160 St. Ronan Street, New Haven, Connecticut 06511.

To the Editor:

I received my August, 1971 issue of Connecticut Medicine today and was very distressed to read the Legislative Report on page 521. I am particularly upset because this report has a most biased headline, expresses an opinion and then is unsigned as to its origin. Is this a report of the Legislative Committee? Is this a report of the Council? Is this a report of an individual replete with personal opinions?

For a long time I have had a strong interest in "physician's assistants" and the role that they might play in improving the delivery of medical services throughout the country. I think the legislative changes included in the Act signed by Governor Meskill recently will go a long way toward enabling "physician's assistants" to do an extremely important job in Connecticut and to provide legal protection for the physicians who employ them. I have not been aware of the Council's strong stand against this legislation but I would emphasize that the Act as passed by the Connecticut Legislature is, with the exception of the optometrist-dentist amendment, the identical "ideal law" advocated by the American Medical Association on page 6 of their report on "Licensure of Health Occupations" adopted by the House of Delegates in December, 1970, and suggested by Attorney Richard Bergen in his February article in *Connecticut Medicine*.

I have taken the liberty of asking Dr. Alfred M. Sadler, Jr. and Attorney Blair L. Sadler, who last year completed a comprehensive report on "Licensure of Health Personnel" as Special Assistants to Dr. Roger O. Egeberg (Assistant Secretary of HEW for Health and Scientific Affairs) and who currently are directing the Yale Physician's Associate

Program, to write an article analyzing these issues that I think every member of the Connecticut State Medical Society should know. I don't think it important that personal recriminations be involved in any discussion of this legislation, but I think anyone who is in a position to utilize "physician's assistants" should be aware of why the legislative changes were necessary and what the act itself actually involves. I hope that this material will be in your hands soon and I feel it urgent that Connecticut Medicine publish it.

I would appreciate your assistance in this matter. All my best wishes.

Sincerely,

Ira S. Goldenberg, M.D.

New Haven, Conn.

Dr. William R. Richards replies:

The definitive author of the article under criticism was me. However, although I happen to concur with its content and words of caution, I can assure you and Ira that it is *not* "a report of an individual replete with personal opinions". Historically, the piece is absolutely factual, and it is clearly stated in the right hand column on Page 521 that the position of the Society on the subject of assistants, the substitute wording that was offered to bill-sponsoring legislators, and the definitive legislative course that was pursued by our Committee on State Legislation were all determined and approved by the Council.

The difference of opinion that developed late in the legislative session between the people at Yale (Mr. Sadler) and representatives of the Society had nothing to do with one group being "for" an assistant's bill and the other being "against" it. Both groups favored the enactment of a measure that would make legal the utilization of qualified assistants in medical practice by licensed Doctors of Medicine. The Yale people, being engaged in the development of assistants' training programs, apparently wanted a statute that would assure an employment market for their trainees. The Society's objective was to give the physician the legal right to pass on the qualifications of persons he hired to assist him and legal authorization to delegate procedures constituting the practice of medicine to persons not licensed to practice medicine.

The Yale people made a great point—occasionally with sufficient emphasis to be offensive—that the wording they preferred came from the AMA, and should be considered sacrosanct. Conversely, they discounted the fact that the wording preferred by the Society was also furnished by the AMA and had at least equal official sanction.

The Yale version won out and, the bill having been signed by the Governor, is now the law of the state. In the Society's opinion, it does not give the physician the legal protection he is entitled to and ought to have. Anyone who sat in on the lengthy Reference Committee hearing on the subject at the recent AMA meeting in Atlantic City would have come away with the distinct feeling that oversimplification of the present and future status of physicians' assistants is potentially dangerous and that a "go slow" course is a prudent one. Assistants and those who are engaged in training them probably do not concur in these conclusions. The Society does concur, and, as I view it, has acted responsibly in cautioning the membership to give proper heed to the various provisions of the new law as they may apply or not apply in individual situations.

Best personal regards.

Sincerely yours,
William R. Richards, M.D.
Executive Director

Connecticut State Medical Society

Meeting Notices

GENERAL

April 25-27, 1972—Tuesday-Thursday
180th Annual Meeting of the Connecticut State Medical Society

Theme: Clinical Pharmacology
Hartford Hilton, Hartford

September, 1971—May, 1972
Lecture Series—Each Tuesday

Basic Sciences As Related to Clinical Medicine: Infectious Diseases, Coronary Care Problems, Diagnosis and Treatment of Tumors
Lawrence and Memorial Hospitals
New London, Connecticut
Contact: Edward Gipstein, M.D.

December 9—Thursday
Carcinoma of the Colon and Rectum
Yale University School of Medicine, Harkness
Auditorium—9a.m.-4:30 p.m.

February 23-25—Wednesday-Friday
Diagnosis and Management of Infectious Diseases
University of California, Center of Health and Science, Los Angeles

March 20-24—Monday-Friday
Specially Treatable Diseases
University of Pennsylvania School of Medicine, Philadelphia

INTERNAL MEDICINE

January 26—Wednesday
CSMS Section on Internal Medicine; Connecticut Society of Internal Medicine; American College of Physicians
Hunt Memorial
Scarborough Street, Hartford
Contact: Benjamin V. White, M.D., Hartford

PSYCHIATRY

Lecture Series: Connecticut Valley Hospital, Middletown
November 16—Tuesday—10:30 A.M.
Morton F. Reiser, M.D.—Challenge of the 70's for the Mental Health Professional
November 23—Tuesday—10:30 A.M.
James R. Stabenau, M.D.—Genetics and Human Behavior
December 7—Tuesday—2:00 P.M.
Lester Grinspoon, M.D.—Marihuana Reconsidered
December 21—Tuesday—2:00 P.M.
Theodore Lidz, M.D.—Further Data on Families of Schizophrenics

SURGERY

January 27—Thursday
Annual Meeting of the Connecticut Chapter of American College of Surgeons
Park Plaza, New Haven
Contact: Francis H. Hall, M.D., Hartford
February 4-5, 1972—Friday-Saturday
Symposium on Problems of the Female Breast as Related to Neoplasms and Reconstruction
Memorial Sloan-Kettering Cancer Center, New York City

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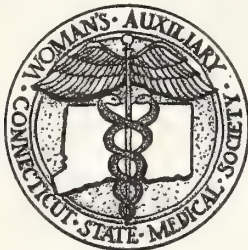
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COMPAC Goes To Washington

Last March twelfth the snow falling in Connecticut was driven by a bitter wind into the frozen grey drabness that comes before spring to New England. It was a day to be rid of. Connecticut's thirty-four member delegation to the American Medical Association's Political Action Committee-Public Affairs Workshop arrived in Washington D.C. to appreciate, by contrast, a blue sky background and a spring green foreground for the white spires and gold domes of America's First City.

At the Washington Hilton they joined eight-hundred doctors and their wives from every other state and climate. This convention differed from others in seriousness of purpose. Educated delegates were here to consider a subject about which they were ignorant and they realized its importance to them. Americans were demanding equal health care for everyone. If doctors did not accept responsibility for formulating opinions and plans for it this would be done by politicians. From North, South, East and West, from Right and Left, this earnest group assembled. A brilliant committee presented the problems involved, suggested solutions or the means of securing them, and impressed upon delegates the alternatives of political involvement or professional suicide.

Dr. Hoyt, D. Gardner of Louisville, Chairman of AMPAC's Board of Directors, expressed the organization's viewpoint when he said, "It has been the doctor's obligation to save a life, now it is also his obligation to save a way of life. National health insurance is inevitable, but physicians can influence the form it will take. Medicine must present a positive plan and be able to influence legislators and voters to accept it."

When John G. Veneman, Under Secretary of the Department of Health, Education, and Welfare, stated that "The public's demanding health care for all is a bitter pill for physicians to swallow," rumbling from the audience proved his point. In his opinion, equal health care *should* be provided by government and the problem of the decade of the seventies is *how*.

U.S. Representative Richard Fulton, Democrat from Tennessee and one of the one-hundred and twenty-two sponsors of Mediredit, the AMA plan for national health insurance, outlined this plan which would pay the full cost of health insurance for the poor, share the cost with those who could pay a part, and help pay for catastrophic illness. He urged physicians to study the Kennedy, Nixon, and AMA health plans and to be able to discuss them intelligently. Levity was introduced in a film strip depicting a physician partially informed about health plans and totally committed to discussing them.

A new AMPAC tool was premiered—ETC—Evaluating The Campaign. Participants were supplied with comprehensive workbooks and assigned alphabetically to one of twelve rooms where experienced campaign workers discussed election techniques. By means of closed circuit television delegates shared information about the total election process from the selection of a candidate through the organizing of committees for research, finance, publicity, volunteers, staff, legal advisors, and speakers to evaluating results of the election.

U.S. Representative Dan Kuykendall, Republican from Tennessee, advised physicians not to be timid about changing their images to their legislators. He recommended that doctors and their families, be-

sides supplying campaign funds, for which they have been appreciated, become actively interested in political organizations. Besides joining forces in AMPAC, he prescribed joining a political party because "The independent voter is also independent of selecting the candidates." His final words present a serious challenge to those who read this Journal:

"It is nine-thirty a.m. in Washington D.C., March 14, 1971. Look at those around you. You are all now beginning the rest of your life. Whatever you do about saving the country—you begin now."

Woman's Auxiliary Representative to COMPAC
Peggy Roch, Mansfield

AROUND THE STATE

New Haven County

Semi-Annual Report of the Board of Governors
of the New Haven County Medical Assn.

October 27, 1971

In 1969 the Board of Governors of the New Haven County Medical Association made a *Decisive Change In Policy* when it endorsed the concept of "aggressively pursuing" a course of action which would "open up channels of communication" with one and all in each and every possible way.

Today, in 1971 this policy is beginning to bear fruit.

Under the leadership of past presidents Pelz and Petrie and current president Root, the Association is emerging into the visibility of both the community and the County Association membership as a viable aggressive and purposeful organization.

Today, the Association is an organization which continues to have idealistic and prognostic goals; which is now "open" to the suggestions and criticisms of its membership and the community; which endeavors to "cooperate" with any and all who would attempt to improve the ways in which the health needs of our community and the workings of our Association are met; and which now aggressively "recruits the membership" to "become involved" in the workings of the Association.

Since the last Association meeting, much attention, exploration, action and communication has gone into the relationships between community, government and medicine on the county, state and local level.

Matters of Peer Review, Health Care Planning, Foundations and HMO's have brought various

committee members to Washington, D.C., Chicago, Hartford, Boston, Westchester, Rochester, Las Vegas, Atlantic City and other locations in search of the knowledge of what a county medical association must do to stay abreast of today's legislative fiat in the fast and suddenly changing world of science and politics.

In these areas, the various concerned committees are beginning to understand how to adapt to the "new order" of "competing" in the "new ball game" of medical care delivery and much more will be heard from them at the March 23, 1972 Annual Meeting when—shortly and surely enough—much of what is alluded to here will have come into some sort of reality in these rapidly changing times.

The seven speakers on the agenda of the semi-annual Association meeting will deal with several current and important subjects which affect the membership. Out of the myriads of possible subjects, time has limited the number of subjects to seven.

It ought to be pointed out that perhaps more frequent meetings of the Association to illuminate many more areas of urgent importance might be in order for the fast moving 1970's. The Board of Governors solicits the membership's suggestions in this (as well as other) areas. The address is 362 Whitney Avenue, New Haven, Connecticut, 06511.

To comply with the by-laws it is reported that the Board of Governors has met five times, and the Executive Committee eight times since the last meeting.

Thanks are given to our committee chairmen, our Councilors, the cooperating volunteer health agencies, the Connecticut State Medical Society, the American Medical Association, and our office staff for their efforts on behalf of the Association during the last half year.

In conclusion, the membership should be reminded that the Board of Governors of the New Haven County Medical Association has recognized the almost exponential rate at which change and challenges have accelerated both in medicine and in the community, nation and world in which we live.

For organized medicine to adopt and effectively deal with this accelerated pace of activities, there is an urgent need for a much greater commitment of thought, manpower and money at the local, county, state and national levels; if physicians are to compete and attain an effective and beneficial role in America's health care system.

Respectfully submitted,

William L. West, M.D., Clerk

Sudden Death And Water Hardness

(Can. Med. J. 105, 155, July 24, 1971, Anderson, T. W. and Le Riche, W. H.) It is possible that there is a systematic geographical variation in the proportion of deaths from ischemic heart disease that occurs suddenly and this variation may be causally related to water hardness or some other environmental factor.

Three indices of sudden death were examined. Each showed a correlation with water hardness that was of similar sign and magnitude.

A detailed examination of 1688 deaths occurring in residents of two cities which differ widely in the hardness of their water supply confirmed that in deaths ascribed to heart disease, the proportion of sudden deaths was higher (by 20-30%) in the northern soft-water city than in the southern hard-water city.—L.H.N.

What Is A Good Teacher?

(Science, 173, 678, August 27, 1971, Rinsley, D. B.) He is a person who provides far more than text books or lectures: he offers himself as a model for his students identification; through him they know not only more than they knew before but also they are more than they were before.

A good teacher regardless of the subject catalyzes the students self-discovery and the joy of the thing in itself, the excitement of knowing for itself. The great teacher goes farther, in his unique way he legitimizes for his gifted students the myriad and inspiring experiences from which new creative possibilities and combinations spring forth.—L.H.N.

Radiation Exposure In Air Travel

(Science, 173, 780, August 27, 1971, Schaefer, H. J.) The prospect of present-day, large-scale passenger operations shifting from jet aircraft flying at subsonic speed at altitudes up to 40,000 feet to supersonic transports flying over 60,000 feet has raised the question of what harmful effects of substantially higher levels of environmental radiation could have on crew members and passengers.

Schaefer measured these hazards and found that levels of ionizing radiation at high altitudes do not significantly increase the population dose.—L.H.N.

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INDICATIONS: Dimetapp Extentabs are indicated for symptomatic relief of allergic manifestations of upper respiratory illnesses, such as the common cold, seasonal allergies, sinusitis, rhinitis, conjunctivitis and otitis. In these cases it quickly reduces inflammatory edema, nasal congestion and excessive upper respiratory secretions, thereby affording relief from nasal stuffiness and postnasal drip.

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WARNINGS: *Use in children:* In infants and children particularly, antihistamines in overdosage may produce convulsions and death.

PRECAUTIONS: Administer with care to patients with cardiac or peripheral vascular diseases or hypertension. Until the patient's response has been determined, he should be cautioned against engaging in operations requiring alertness such as driving an automobile, operating machinery, etc. Patients receiving antihistamines should be warned against possible additive effects with CNS depressants such as alcohol, hypnotics, sedatives, tranquilizers, etc.

ADVERSE REACTIONS: Adverse reactions to Dimetapp Extentabs may include hypersensitivity reactions such as rash, urticaria, leukopenia, agranulocytosis and thrombocytopenia; drowsiness, lassitude, giddiness, dryness of the mucous membranes, tightness of the chest, thickening of bronchial secretions, urinary frequency and dysuria, palpitation, hypotension/hypertension, headache, faintness, dizziness, tinnitus, incoordination, visual disturbances, mydriasis, CNS-depressant and (less often) stimulant effect, anorexia, nausea, vomiting, diarrhea, constipation, and epigastric distress.

HOW SUPPLIED: Light blue Extentabs in bottles of 100 and 500.

Toxic Factors In Enzymes Used In Laundry Products

(Science: 173, 259, July 16, 1971, Dubos, R.) Enzyme preparation from *Bacillus subtilis* have been widely used for laundering purposes. Exposure to such crude bacterial products have elicited a variety of allergic reactions varying from dermatitis to respiratory ailments. Such reactions have been particularly numerous and violent among factory workers engaged in the handling and packaging of the products containing the so-called enzymes. It can be expected also that such reactions will increase in severity and prevalence among the general public if the use of enzymes products become more widespread.

Dubos tested these enzymes on mice and produced hemolysis hemagglutination inhibition of bacterial growth and antibacterial activity. The products also aggravate infection by *Klebsiella pneumoniae* and enhanced staphylococcus infection in very minute doses.

It is not unlikely that the various preparations of enzymes differ in immunological specificity and sensitizing ability, a fact which would greatly complicate the formulation of safety controls in their manufacture and use.—L.H.N.

Use Of Two Cerebral Hemispheres To Increase Brain Capacity

(Nature: 232, 271, July 23, 1971, Diamond S., Beaumont, G.) Each cerebral hemisphere in cats and monkeys possesses its own perceiving learning and remembering system and each functions independently in split brain subjects. This is also true in humans.

The split brain monkey can process and respond to more information involving bimanual motor sequencing than can control animals with their commissures intact, and commissurotomy patients perform double voluntary reaction time tasks as fast as they carry out single reactions.

In man two verbal messages projected to separate hemispheres are dealt with more efficiently than two messages directed simultaneously to the same hemisphere and reaction times are shorter when the information is projected separately to each hemisphere.

Capacity can be assessed by asking an individual to perform two tasks at the same time. Diamond tested 12 first year undergraduates and concluded that on the visual task the left hemisphere is

capable of processing more of the information presented than the right. The differences reported can be explained by reference to the specialization of the left hemisphere for the control of speech.

It appears that each hemisphere possesses its own perceptual analyzing system and that each acts as an information channel while the use of two information channels proves itself superior to the use of one.

The presence of two analyzing systems showing parallel activity in the brain raises a possibility of the distribution of the perceptual load between con-joint systems which may be a characteristic mode of brain function.—L.H.N.

Unemployment Among Scientists

(Nature: 232, 150, July 16, 1971). There are some alarming indications of unemployment among scientists and engineers gleaned from a questionnaire sent to 300,000 scientists by N.S.T. The figures are based on replies of scientists who could be reached and do not take into account the fact that many scientists were underemployed or had left science for other employment.

Chief findings are 1.4 percent of all doctorates were out of work this spring compared with 0.9 percent last year. Young scientists were hardest hit with an unemployment rate of 5.3 percent.

The unemployment rate among women was running 5.2 percent.

About 45 percent of those unemployed said their last science related employment was supported to some extent from government funds.

Chemists and physicists accounted for half of the total of unemployed scientists.

Sociologists and computer scientists also reported unemployment rates over 3 percent.

The hardest hit area is California where 42 percent of the unemployed scientists were located and in Seattle, Washington, the unemployment rate among scientists was running 5.6 percent.—L.H.N.

Oral Contraceptives May Tend To Protect Against Benign Breast Cancer

(JAMA: 217, 20, 1971). Martin P. Vessey of Oxford University began a retrospective epidemiological study in December, 1968 at five hospitals to determine the effect of taking the "pill" on breast tumors in women. There were 166 patients with breast masses that proved benign on biopsy and 54

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others who had primary treatment for breast cancer. There were compared with 220 controls.

It appears that oral contraceptives may offer some protection against benign breast disease and there is no evidence that they increase the risk of breast cancer.

This was the original finding by the late Dr. Gregory Pincus who first designed the "pill".—L.H.N.

Lead Poisoning: Zoo Animals May Be The First Victims

(Science: 173, 130, July 9, 1971) Researchers at the New York Medical College have discovered that a large proportion of the animals at Staten Island Zoo suffer from lead poisoning. The major source appears to be atmospheric contamination. The findings have ominous implications for the people who live in that area of the city.

Last November an 11 month old leopard became weak, started losing its hair, and refused to eat. He was dead 24 hours later. His fraternal twin was found paralyzed 3 weeks later. His hair had extremely high levels of lead and zinc. A test on the first leopard's preserved organs showed the same.

The other animals in the zoo were then checked for lead poisoning. They showed high concentrations of lead in their bodies. The victims ranged from reptiles to primates, to snakes, to a great horned owl. The source of the lead found outside the cages was in grass leaves and soil collected in zoo grounds where automobiles continuously spew out lead-containing exhausts.

The same problem was then found in the Bronx Zoo. The wide range of species affected in the zoo seems to indicate that man might well be in danger.—L.H.N.

Location Of The Duodenal Pacemakers

(Gut: 12, 40, 1971, Herman-Taylor, J. and Code, C. F.) The pacemaker that regulates intrinsic small intestine motor rhythm has been known since 1922. It is responsible for a cyclically recurring rhythmic change in electrical potential that is propagated caudally in the longitudinal muscle layer in mammals including man.

It is called the slow wave basic electric or pacesetter potential rhythm. It is located in the dog in the first five or six millimeters of the duodenum. The location of the pacemaker was established by a series of myotomies.—L.H.N.

Current Status Of Mechanical Circulatory Assistance (MCA)

(New Eng. J. Med.: 285, 348, August 5, 1971, Sanders, C. A., Buckley, M. J. and Austen, W. G.) There are at least 10 circulatory-assistance systems commercially available. Obviously MCA is a rapidly developing field with thus far few triumphs and more defeats. The most successful method is the intra-aortic balloon.

Most other devices are still in the trial stage and are used in patients in whom all other therapy has failed. Obviously, devices capable of being permanently implanted would reduce morbidity and mortality from contractile failure of the left ventricle.

The principle of MCA is sound and with technologic advances it should become of great value in the future.

The devices are those that decrease the preload, those that decrease aortic impedance and direct cardiac compression.—L.H.N.

Exercise Test Results In Coronary Disease

(Ann. Intern. Med., 74, 509, 1971, FitzGibbon, G. M., et al.) FitzGibbon and his associates found the Master's two step test of doubtful value in detecting myocardial ischemia caused by coronary atherosclerosis.

They studied 160 patients given a double Master's two step test and correlated their findings with results of cardiac function testing involving cardiac catheterization. False positive responses in subjects without evidence of coronary disease amounted to 16 percent. False negative tests in patients with obstructive coronary atherosclerosis was found in 33 percent of the patients.

Their conclusion was that the test yields unacceptable percentages of false positive and false negative results.—L.H.N.

Neuromythology

(Nature, 233, 60, September 3, 1971, Joseph Tomasch) This author points out that counts of nerve cells from newborn to presenescence produced no age correlation in the human olivary nucleus. This points up the need for more cell counts at all ages in all parts of the brain.

De Lorenzo for example, found no evidence of the loss of Purkinje cells in man although this had previously been reported.

Thus not only for rodents, but in man too, the more recent studies based on layer material fail to demonstrate loss of neurones with advancing age. Available information about the regular Purkinje cell layer is so contradictory that it is even less likely to provide unequivocal data easily. The billion range is not of variability but one of uncertainty.

Recent work by Dayan raises some doubts about some more recent tenets of the neuropathology of aging. Dawkins model of memory helps to bring to light the narrow base supporting neurones loss as an uncontestable axiom.—L.H.N.

The Swansea Syndrome

(Nature, 233, 4, September, 1971) Goodman and Roberts have shown the presence of large amounts of metals such as zinc, lead, cadmium and copper in plants and soil to the east of Swansea valley in Wales.

At one of the most contaminated sites, some mosses contained as much as 1200 ppm. of zinc, 800 ppm. of lead, and 40 ppm. nickel. One bizarre accompaniment of the investigation was the discovery that several horses found dead in a field near Llansomlet in the spring of 1970 had large concentrations of lead in their systems.

It is assumed that the high concentration of metal elements in the region have been caused by windborne pollution from neighboring slag heaps. But it may also come from exhausts from Chimneys.

The problems in the Swansea area might turn out to be insignificant compared with those found elsewhere in the country. This points up the effects and dangers of a high atmosphere heavy with metal concentration.—L.H.N.

Synthetic Hormone Could Improve Fertility Control

(JAMA: 217, 757, August 9, 1971) The synthesis of a luteinizing hormone stimulator (LH-RH) has just been announced by Dr. A. V. Schally from the Tulane Medical Center. Present stimulators now in use (clomiphene, for example) are expensive, frequently over react and may cause multiple births, Citing a recent case of an Australian woman who gave birth to 9 children, none of whom lived. With the clinical structure known the development of an LH-RH antagonist also appears imminent. An antagonist would be given to block the release of luteinizing hormone and consequent ovulation and could be the first contraception free of side effects since it would not be a steroid, as well as one that could be used for long term "inoculation" against conception.

LH-RH was extracted from pigs hypothalamus, proved highly specific in all species tested including man. The synthetic hormone was developed after a polypeptide had been isolated from large numbers of pig hypothalami. The synthetic hormone has the qualities of both LH-RH and follicle stimulating hormone. This study assisted in the recognition that the hypothalamus controls the fertility action of the pituitary.

Further research is focusing on developing of a compound to neutralize LH-RH for contraceptive purposes along with large scale testing of the synthetic hormone.—L.H.N.

Fate Of Air Pollutants: Removal Of Ethylene, Sulfur Dioxide, And Nitrogen Dioxide By Soil

(Science, 173, 914, September 3, 1971, Abeles, F. B., et al) These authors exposed soil samples to ethylene, sulfur dioxide and nitrogen dioxide. Others had done a similar experiment with carbon monoxide. In 1966 total ethylene production from all sources amounted to 150 million tons a year, 32 million hydrocarbons, 330 million sulfur dioxide, 200 million nitrogen dioxide and 1 billion of carbon monoxide. In laboratory experiments soil acts as an important sink for ethylene through microbial degradation and for SO₂ NO₂ by chemical action. Soil samples reduced CO from 120 ppm to near zero within 3 hours.

NO₂ dropped from 100 to 3 ppm in 24 hours.

SO₂ was reduced from 100 to 8 ppm in 15 minutes by soil.—L.H.N.

NEW BOOKS IN REVIEW

MODERN PSYCHIATRIC TREATMENT. *Thomas P. Detre, M.D., FAPA and Henry G. Jarecki, M.D., Publishers, J. B. Lippincott Co., Philadelphia and Toronto, 733 pages. 51 tables 1971. \$25.00.*

Reviewed by: LOUIS H. NAHUM

This valuable book can be summarized by two words, "Clinical Wisdom". The psychoanalysts won't like it, because it bypasses their field of endeavor. The medical world will like it because it is extremely helpful to the clinician in recognizing, understanding and utilizing the new modalities used in psychiatry. The community leaders will reach for it because it gives them a grasp of what society does to human beings in inducing mental illness. The student will like it because it will serve as a rich source of therapeutic information. It is particularly useful to the sophisticated psychiatrist whose orientation is both dynamic and organic.

The book is long on clinical judgment and short on hypotheses. It emphasizes the role of a thorough physical and neurological examination before a psychiatrist undertakes therapy. The authors use the example of an adolescent girl with dramatic fits of temper who is berated and ignored but who is really suffering from temporal lobe epilepsy.

The sixteen chapters covering the whole range of psychiatry are in part a distillate of contemporary literature and in part the rich personal experience of the authors. The book begins with a masterful chapter on the assessment of the patient, his symptoms, fears and need for treatment.

From the point of view of modern treatment, pharmacotherapy is perhaps the most significant aspect of the "contemporary" approach to mental illness. It has essentially eliminated the widespread uses of such destructive procedures as lobotomy, reduced the need to hospitalize patients and markedly shortened the stay of others.

Psychopharmacology has given the clinician powerful tools which can effectively alter affect and may be tailored to the individual needs of the patients. Such drugs may be used separately as well as make certain patients accessible to psychotherapy.

The authors have performed an arduous task with brilliant results. They have brought together in a single volume the major trends and techniques in contemporary therapy of those suffering "social dysfunctioning" which is their major criterion of psychiatric illness.

The authors' viewpoint is basically organic, applying knowledge derived from the biochemist, the internist, the pediatrician, the neurologist, and the neurophysiologist. In so doing they have to a considerable degree reintegrated psychiatry and medicine. They devote a significant chapter to "The Psychiatrist as Consultant" indicating the psychiatrists involvement with medical and surgical illnesses, the question of abortion, psychotropic agents in the management of medical, surgical and obstetrical patients.

Under the heading of "Organic Brain Syndromes", valuable insights are gained concerning the concept of "organicity" itself, Dementia, Delirium, Post-traumatic Brain Syndromes, and Convulsive Disorders. The authors do not neglect the convulsive therapies and psychosurgery as well as, insulin coma, thus bringing together the newer knowledge of

psychopharmacology and the help gained from non-contemporary modalities. Throughout an extensive bibliography is given almost paragraph by paragraph.

There is an appendix of inestimable value on drugs used in psychiatry. A summary of the American Psychiatric Association Diagnostic and Statistical Manual and a drug argot glossary. There is also an author index and subject index.

A word of praise belongs to the publishers for their beautiful white paper and excellent reader print.

HARRISONS PRINCIPLES OF INTERNAL MEDICINE. *Editors: Maxwell M. Wintrobe, George W. Thorn, Raymond D. Adams, Ivan L. Bennett, Jr., Eugene Braunwald, Kurt J. Isselbacher, Robert G. Petersdorf and 170 contributors. Sixth edition. 2 Volumes, 2,016 pp., McGraw-Hill Book Company, New York. 1970. \$26.50.*

Reviewed by: LOUIS H. NAHUM

These 2 volumes, double columned pages are produced by 170 leaders of American medicine, clinical biochemistry and pathophysiology, form an integral part of the book and are considered within the clinical setting.

The plan of these two volumes is to begin with the editors general philosophy regarding an approach to the patient (Part I). Then certain fundamental matters regarding inheritance and growth are discussed in part 2, such as the inheritance of human disease, a subject which is assuming greater and greater importance in clinical medicine. In part 3 there are the cardinal manifestations of disease, the mechanism whereby various symptoms are produced and how to recognize the diseases of which the symptoms are the expression.

The discussion of the cardinal manifestation of disease is not limited to a consideration of symptoms and physical signs. Laboratory methodology has become more essential than ever for the effective practice of medicine and is given a full coverage in chapters 64-67, although discussion of laboratory procedures is also found throughout the books.

Recognition of the importance of altered immune responses as fundamental mechanism of the pathogenesis of disease has led to the introduction of Part 4—disorders due to hypersensitivity and altered immune response. Seven chapters are devoted to this important aspect of clinical medicine.

The remainder of these books is concerned with more specific disorders and disease entities. The syndrome approach is emphasized as much as possible and the reader will find out at the beginning of most of the sections, either in the introduction and or first chapter, a discussion of the approach to the patient having a type of disease considered in that section.

Treatment is discussed in relation to specific disorders or categories of disease (Chapter 135), chemotherapy of infections (Chapter 266), principles of drug therapy in cardiac disorders and is described in terms which are as specific as possible. There are a few references at the end of each chapter limited to reviews and monographs.

It is understandable that the field is enormous and that 2,000 double column pages are hardly sufficient to do other than constrict the coverage. But one wonders why the

electrocardiogram, normal and abnormal, receives a coverage of 11 pages and the thyroid 20 pages.

There is no doubt that this book is written by highly qualified authors, is encyclopedic in scope. It is grounded in correct philosophy of what a text of medicine should contain. Principles before facts, basic science to help derive symptomatology of disease, new developments as for example: altered immune response advances in the laboratory are all here. It is a mine of knowledge and is oriented to the present day medical student. There will not be a day when student and practitioner alike will not have his horizons broadened by looking up some medical problem in this text book.

TECHNIQUE OF THE NEUROLOGIC EXAMINATION

*William DeMyer, M.D., McGraw-Hill Book Company,
A Division of McGraw-Hill, Inc., New York, N.Y.,
pp. 442. \$14.95.*

Reviewed by: JONATHAN H. PINCUS

The programmed technique may be appropriate for teaching subjects such as neuroanatomy where the answers are definite and always correct; however, the catechism method of teaching the technique of neurologic examination and history taking is limited as there are many variations and different areas of emphasis which some competent physicians stress and others do not. For example, on page 1 there is listed all of the items a neurologist might need for performing a neurological examination; there are 15 items. Among these, there are seven that I have never used in my 10 years as a neurologist. Several items I consider important are omitted. Another example of possible misplaced emphasis is in the first section concerning the eyes. This chapter is concerned largely with a definition of a large number of terms which are almost never used clinically, such as corectasia or corectopia. As this book is designed for students who have had neuroanatomy, its great stress on neuroanatomy seems excessive. Less easy to understand are the inaccuracies; for instance, microcephaly is defined as a head circumference more than 3 cms below the mean for the age. The proper definition of microcephaly is any head circumference that is more than 2 standard deviations below the mean and this varies considerably with the age and sex of the child.

The book should be something of a beginners manual telling how-to-perform particular tests. This the author endeavors to accomplish but the suggested tests for aphasia and the interpretation of results are oversimplified and inaccurate. The Gerstman syndrome does not really exist and is certainly not specific for the angular gyrus of the dominant hemisphere as is indicated in this book. Hemianopia does not necessarily arise from a lesion in the occipital lobe. Auditory agnosia does not imply loss of a temporal lobe function specifically.

The section on the evaluation of the sensorium is similarly inadequate, as no mention is made of proverb interpretation, use of similarities or subtraction of serial 7's.

A good book on the neurologic examination is definitely necessary and would be very useful in the teaching of clinical neurology. I have yet to see one which is superior to the small paperback handbook put out by Denny-Brown about 25 years ago. I think that a student who went through this book by Dr. DeMyer might learn enough to justify the rather modest expenditure of \$14.95.

CIBA FOUNDATION SYMPOSIUM, Edited by: Wolstenholme, G. E. W. and O'Connor, N. J. A. Churchill Co., London (Publishers), 1970.

Reviewed by: JONATHAN H. PINCUS

This is an eminently readable symposium concerning Alzheimer's disease. Alzheimer's disease is discussed from several different points of view and it is very helpful to have so much pertinent information about this condition in one book by the leaders of research in this field. The book contains many chapters devoted to morphological changes which are seen in Alzheimer's disease; in particular, the ultrastructure of the neurofibrillary tangle and the senile plaque were discussed in detail. Conditions and agents which create similar changes in the brain were also discussed and related to Alzheimer's disease. The genetics of the disease was discussed and the genetic form of the disease was differentiated by most of the participants from the sporadically occurring form of the disease. Attention was given as well to the clinical picture of Alzheimer's disease in a paper by Corsellis which correlated symptomatology with involvement of limbic areas.

Although the book is quite a useful one and brings one up to date in the current standing of this disease, it is ultimately frustrating because there is no known cause of Alzheimer's disease and because most of the changes within the nervous system seem to be secondary ones. In this sense, the discussion was somewhat sterile and the subject somewhat isolated. One example of how the discussion might have been broadened would have been to give greater attention to the possibility that Alzheimer's disease might be related to viral infections as this seems to be an important cause of many degenerative neurological syndromes which were previously of unknown etiology. Nonetheless, the book is highly informative and well worth reading.

SENSORINEURAL HEARING LOSS Edited by G. E. W. Wolstenholme and Julie Knight, J. & A. Churchill, 104 Gloucester Place, London—Publisher.

Reviewed by: HOWARD W. SMITH

The Ciba Foundation Directors are to be congratulated for establishing a symposium on Sensorineural Hearing Loss. Publication of the papers presented at this symposium in one single edition makes it possible for many persons involved in either investigation or treating sensorineural hearing loss to consider the many facets of the problem. The book also presents following each paper, the varied comments of those presenting papers of their own and participating in the analysis of each paper. I found the comments and questions following each paper to be most helpful since they either answer the questions or emphasize the significance of the material presented.

The subjects of the symposium covered a wide range from the personal experience of a deaf person seeking a cure, deaf parents inquiring about genetic counseling, the magnitude of the problem and its priority in the scale of medical investigation, histopathological studies related to the disease process in sensorineural deafness, the research methods available to study sensorineural deafness, and the problem of "where do we go from here".

This is a book well worth reading for any person who is in any way connected with the problem of hearing and speech deficiencies.

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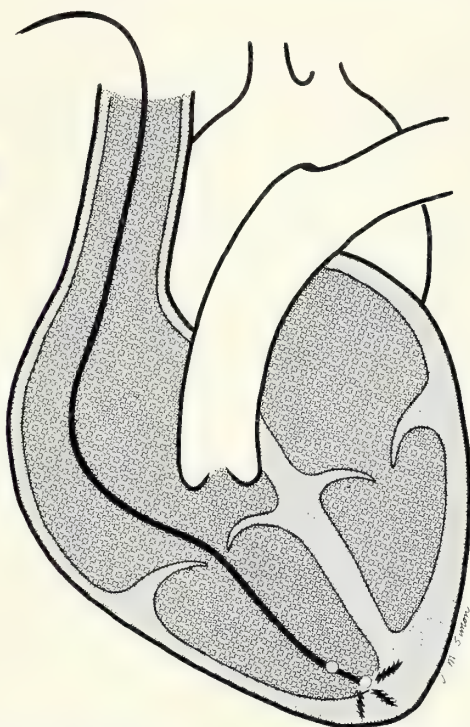
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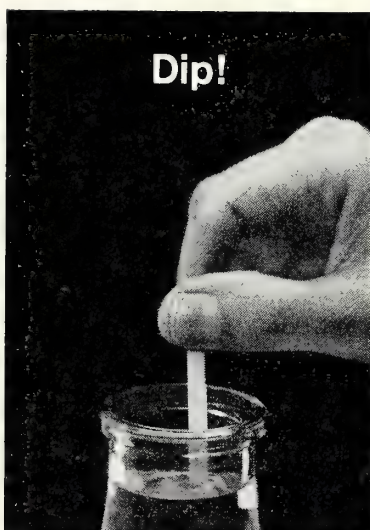
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Dalmane (flurazepam HCl) 30 mg reduced awake time—both before and after falling asleep - by fifty percent of pretreatment values in patients with insomnia.^{1,2}

Two sleep laboratory studies recently confirmed findings of earlier studies of this type, namely, that Dalmane 30 mg was effective in patients who had trouble falling asleep, staying asleep or both. One 30-mg capsule of Dalmane usually induced sleep within 22 minutes, decreased the number of awakenings and the wake time after the onset of sleep, and provided 7 to 8 hours of sleep without need to repeat dosage during the night.

These studies utilized identical protocols and included eight insomniac patients. Sleep laboratory measurements in a limited number of patients are derived from all-night electroencephalographic, electro-oculographic and electromyographic tracings. Unlike traditional methods of evaluation, they are quantitative, reproducible and projectable to large numbers of subjects.

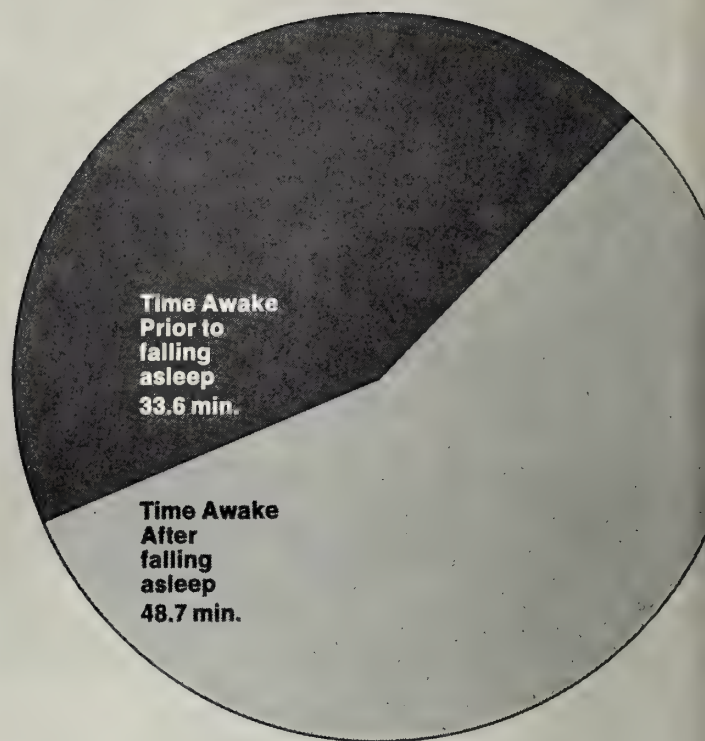
Results shown represent average values in all subjects for the three consecutive nights of placebo administration prior to Dalmane therapy and the seven consecutive nights on Dalmane 30 mg.

Dalmane is also relatively safe, as reported in clinical studies. Instances of morning "hang-over" have been relatively infrequent; paradoxical reactions (excitement) and hypotension have been rare. Dizziness, drowsiness, lightheadedness and the like were the side effects noted most frequently, particularly in the elderly or debilitated. (An initial dose of Dalmane 15 mg should be prescribed for these patients.)

References: 1. Frost, J. D., Jr.: "A System for Automatically Analyzing Sleep," Scientific Exhibit presented at Clinical Convention, A.M.A., Boston, Nov. 29-Dec. 2, 1970, and Aerospace M.A., Houston, April 26-29, 1971.

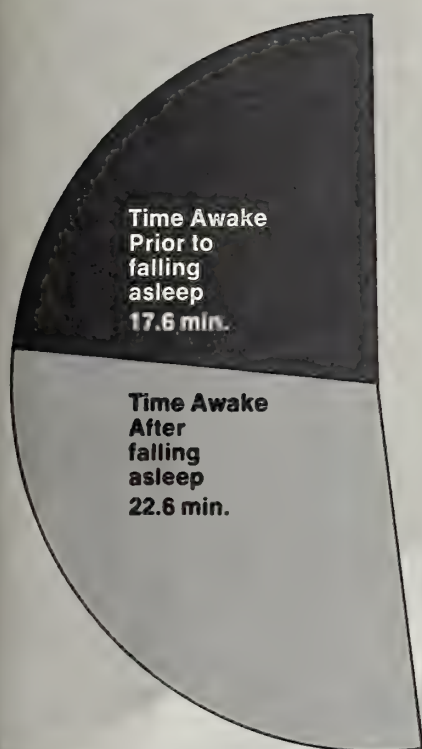
2. Data on file, Medical Department, Hoffmann-La Roche Inc., Nutley, N.J.

Before
Dalmane
(flurazepam HCl)



and slept through the night

On
Dalmane
(flurazepam HCl)



Average sleep laboratory measurements in cited studies

Parameter	Before Dalmane	On Dalmane
Time required to fall asleep	33.6 min.	17.6 min.
Wake time after onset of sleep	48.7 min.	22.6 min.
Number of wakeful periods after onset of sleep	12.2	8.4
Total sleep time	420.0 min.	447.5 min.
Total sleep percent	88.6	94.5

Clinical effectiveness as
proven in the sleep laboratory

Dalmane[®]

(flurazepam HCl)

30-mg capsule h.s.—usual adult dosage.
15-mg capsule h.s.—initial dosage for
elderly or debilitated patients.

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Indications: Effective in all types of insomnia characterized by difficulty in falling asleep, frequent nocturnal awakenings and/or early morning awakening; in patients with recurring insomnia or poor sleeping habits; and in acute or chronic medical situations requiring restful sleep. Since insomnia is often transient and intermittent, prolonged administration is generally not necessary or recommended.

Contraindications: Known hypersensitivity to flurazepam HCl.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. Caution against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Use in women who are or may become pregnant only when potential benefits have been weighed against possible hazards. Not recommended for use in persons under 15 years of age. Though physical and psychological dependence have not been reported on recommended doses, use caution in administering to addiction-prone individuals or those who might increase dosage.

Precautions: In elderly and debilitated, initial dosage should be limited to 15 mg to preclude oversedation, dizziness and/or ataxia. If combined with other drugs having hypnotic or CNS-depressant effects, consider potential additive effects. Employ usual precautions in patients who are severely depressed, or with latent depression or suicidal tendencies. Periodic blood counts and liver and kidney function tests are advised during repeated therapy. Observe usual precautions in presence of impaired renal or hepatic function.

Adverse Reactions: Dizziness, drowsiness, lightheadedness, staggering, ataxia and falling have occurred, particularly in elderly or debilitated patients. Severe sedation, lethargy, disorientation and coma, probably indicative of drug intolerance or overdosage, have been reported. Also reported were headache, heartburn, upset stomach, nausea, vomiting, diarrhea, constipation, GI pain, nervousness, talkativeness, apprehension, irritability, weakness, palpitations, chest pains, body and joint pains and GU complaints. There have also been rare occurrences of sweating, flushes, difficulty in focusing, blurred vision, burning eyes, faintness, hypotension, shortness of breath, pruritus, skin rash, dry mouth, bitter taste, excessive salivation, anorexia, euphoria, depression, slurred speech, confusion, restlessness, hallucinations, and elevated SGOT, SGPT, total and direct bilirubins and alkaline phosphatase. Paradoxical reactions, e.g., excitement, stimulation and hyperactivity, have also been reported in rare instances.

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Subscription rate for non-members \$15.00; Student-Members, interns and residents \$7.50; single copy \$1.50.

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Surgical Aspects of Cardiac Pacemaking

Harold Stern, M.D. and Allan L. Toole, M.D.

Introduction

The use of electronic devices to stimulate the heart in patients with heart block of varying degree and selected tachyarrhythmias has been well established. The absolute and relative indications are discussed elsewhere. From the purely surgical point of view, intra-operative placement of temporary wires following cardiac operations is a recognized procedure. These wires are available for treating post-operative arrhythmias and are simply removed during the convalescence period. In the past, temporary pervenous wires were routinely inserted prior to permanent pacemaker implantation because of the fear of the consequences of asystole. This was particularly true when trans-thoracic implantation of pacemaker wires into the myocardium was the only method available for permanent pacemaking. Of course, temporary wires which have been inserted for emergency use or for therapeutic trials are allowed to remain in position until permanent pacing is established.

Temporary Pacing

External Stimulation. Because of the high voltage which is required to stimulate the heart through the intact thorax and because of the uncertainty of the effectiveness of such pacing, this method is rarely used. However, occasional lives are saved by this technique even though it is extremely painful to the patient and may result in cutaneous burns. In such patients external cardiac massage should perhaps be considered as the ideal treatment.

Percutaneous Myocardial Electrodes. This form of pacemaking has been used frequently and, indeed, special wires have been devised for its implementation. It is primarily indicated for the patient who is in extremis, who must be paced immediately, and when there is no immediate availability of fluoroscopic control. Wires are placed directly into the right or left ventricular chamber

through needles. The authors have carried out this technique on several occasions and in each case electrical stimulation has been achieved but the effectiveness of cardiac contraction is open to question. No survivals have resulted from this type of pacing in our experience.

Transvenous Endocardial Pacing. This is now the universal method for temporary pacing, the catheter being passed through the superior vena cave, right atrium and finally into the right ventricle where the tip is made to lie on or near the endocardial surface.

Permanent Pacing

Myocardial Leads. Originally all permanent pace-making was carried out with myocardial leads which required the use of an open thoracotomy. Many patients benefitted and continue to benefit from this type of pacemaker. However, thoracotomy is not "minor" in patients with heart block and usually of advanced age. All complications associated with thoracotomy were encountered in this group of patients. In addition, myocardial wires are not nearly as reliable as the newer endocardial leads. Only one of our patients continues to depend on such a pacing system. Her vena cava is completely occluded by old inflammatory disease and endocardial pacemaking could not be carried out. All other surviving patients have been converted to endocardial electrode pacing.

Endocardial Leads. This type of electrode is simple to insert, results in minimal trauma to the patient and is extremely reliable in long term use. Both unipolar and bipolar systems are in general use depending on the personal choice of the surgeon.

Types of Impulse Generators

The early temporary pacemaking devices were large plug-in units which varied considerably in their reliability and which occasionally electrocuted patients because of improper grounding. It soon became apparent that only battery-driven pacemakers should be used for temporary pace-making. Miniaturization has decreased their size markedly so that they now can be conveniently pinned to the patient's garments or strapped in

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place to the arm or the thorax. The implantable units have always been very small, their size being limited essentially by the size of the batteries. Atomic energy sources are now being studied in the experimental animal.

Fixed Rate Pacemakers. All early models were of this variety and although the rate could be varied by one of several means, the term fixed rate pacemaker implies that the unit fires independent of the patient's own cardiac electrical activity. Competition between the fixed rate pacemaker and the patient's own electrical activity occurred frequently in patients other than those with complete heart block. Induction of ventricular fibrillation by stimulating the heart during the period of the T wave might have occurred but, if so, it must have been extremely rare. In third degree heart block pacemaker arrhythmias do not usually occur but may do so if the ventricle becomes unduly irritable, as with electrolyte imbalance or digitalis excess. One of our patients whose complete heart block was paced successfully for two years with a fixed rate pacemaker suddenly reverted to an intermittent sinus rhythm. During these periods troublesome palpitations occurred.

Because of the significant number of rhythm disturbances associated with fixed rate pacing, even in patients with complete heart block, we have abandoned this type of pacemaker completely.

Variable Rate Pacers. These pacers are of two general types. The pacing electrode also acts as a sensing probe. This constantly monitors the patient's own electrical activity. The *demand type* does not fire any stimulus at all if QRS spikes occur faster than a preset interval. This reduces battery drain. If the R-R interval exceeds this preset interval, the unit immediately takes over.

The Stand-By Pacer. This type fires during the patient's QRS complex if the R-R interval is faster than the preset limit and fires independently if this R-R interval is exceeded. The advantage of this type of unit is that its function can be tested by viewing a routine electrocardiogram. The demand unit, on the other hand, must be made to work in order to test its function when the patient is in sinus rhythm. Despite this inconvenience, we prefer demand units primarily because of their superb performance and the theoretical increase in longevity of the batteries.

Technical Considerations

Temporary pacing wires may be inserted through any convenient vein including the external jugular, cephalic, subclavian, antecubital and, in rare cases,

the femoral vein. The direct cutdowns upon the above veins may be performed or percutaneous insertion through large bore needles carried out. In general, the closer to the heart the better. Antecubital veins should be avoided because of the high incidence of phlebitis in the arm and the need for fixation of the arm to avoid dislodgement of the catheter tip. Antibiotic ointment is placed at the cutdown or percutaneous site. The catheter is advanced to the apex of the right ventricle and a crude threshold is tested with the aid of the pacemaker generator itself. Ideally, thresholds of less than 3 milli-amps. should be sought. However, pacing has been carried out with much higher thresholds for prolonged periods especially in the infarcted heart. Fixed rate pacemakers should *never* be used in the management of brady-arrhythmias associated with myocardial infarction. The vulnerability of the infarcted heart to ventricular fibrillation by pacing in the T wave is a well documented fact. Xylocaine is always available for immediate use and in many cases it is given prophylactically. This is especially true in patients who are receiving or who have recently received Isuprel for maintenance of an effective cardiac output. Defibrillator paddles should be in readiness as well as equipment for oxygenation and respiratory assistance. The use of very stiff pacemaker wires should be avoided so as to decrease the incidence of myocardial perforation. It is possible to pass some electrode catheters with the aid of the cardiogram alone without fluoroscopic guidance but this has been unreliable in our hands and has often resulted in more delay than a quick trip to the X-ray Department with portable monitoring equipment. We have paced some patients with self-seeking, filamentous wires which are carried into the right ventricle by the flow of blood. The results have been too variable to warrant their continued use. As soon as possible after pacing is carried out, a baseline chest film is taken to help diagnose possible future malfunction.

Temporary catheters have been left in for as long as three weeks without apparent difficulty.

Permanent endocardial electrodes are inserted through the cephalic vein whenever possible. This obviates the need for passage of the wire over the clavicle which tends to dislodge it by its motion. Theoretically permanent catheters with flanged tips should tend to dislodge with less frequency. The tiny flange tends to catch in the trabeculae of the ventricular chamber. Occasionally, in the absence of a good cephalic vein or external jugular

vein, the internal jugular vein is utilized with the aid of a pursestring of fine arterial silk. The internal jugular vein has not been sacrificed for pacing in our experience. If at all possible during catheterization the catheter is passed out into the pulmonary artery and then withdrawn so that a ventricular position of the catheter is a certainty. The final advancement of the catheter tip is made with the stiffening wire removed from the electrode. Without the stiffening wire electrode catheters are quite supple, and danger of perforation of the ventricle is minimized. Careful threshold determinations are made for permanent implantation and should approach zero with the newer type of electrodes. If extremely low thresholds are not obtained, less than optimal catheter position is assumed and further attempts at obtaining a low threshold are made. Lateral exposure either by fluoroscopy or by chest roentgenogram proves the optimal anterior position of the catheter. This avoids inadvertent stimulation through the coronary sinus and the occasional case of diaphragmatic stimulation with a posteriorly placed catheter. As with positioning of temporary pacemaker catheters, Xylocaine is always available. Our patients are always well oxygenated with the aid of a face mask even though the procedure is always done under local anesthesia. This helps allay apprehension and probably also decreases myocardial irritability. Strict asepsis is carried out as would be in a regular operating room even though our pacemakers are implanted in the X-ray Department. This plus careful skin preparation plus the routine use of pre-operative prophylactic antibiotics we feel has served to reduce infection almost to zero. Hemostasis is carefully attended to and all wounds are drained with the aid of suction catheters to prevent hematoma formation and possible subsequent wound dehiscence. Occasionally, myocardial irritability becomes manifest after the insertion of a new pacemaker but this has rarely required Xylocaine infusion and usually lasts for less than 24 hours. There have been no operative deaths in our series of over 200 patients.

Complications

Ventricular perforation has already been alluded to. This is manifested by failure to pace, stimulation of the diaphragm or by roentgenographic localization of the catheter tip. This complication is readily reversed by simple withdrawal of the catheter under fluoroscopic control. Hemopericardium of clinical significance has not been noted. Catheter tip displacement into the ventricular chamber with resultant intermittent pacing or into the atrium or

cava has occurred both early and late. This complication has been extremely rare in those patients whose catheter was felt to be optimally positioned by the operating surgeon.

On two occasions it was impossible to pace the patient because of inability to fix the catheter in a permanent endocardial location. One patient had a huge right ventricular chamber. The other patient had congenital heart block and ventricular pacing was always associated with pacing of the left diaphragm without perforation of the heart. After two attempts it was necessary to remove the endocardial unit completely.

It has always been possible to reposition dislodged pacemaker wires in the remaining patients whether this occurred in the immediate post-operative period or weeks or months later.

The subcutaneous pocket which is fashioned to receive the pacemaker unit must be kept as small as possible without being too snug. This helps result in rapid fixation of the pacemaker unit. The unit of one patient was freely movable about several axes. This resulted in knotting of the wire, erosion of the insulation and consequent short-circuiting of the impulse. This was corrected by re-insulating the wires and fixing the pacemaker generator to the chest wall.

Despite careful hemostasis and drainage of the pacemaker pocket, hematomas have occurred and in one case resulted in a wound dehiscence.

There have been four infected pacemaker pockets and one presumed catheter endocarditis. The catheter endocarditis was readily controlled by systemic antibiotics and did not require removal of the catheter or generator. Of the four infected pacemaker pockets, two required complete removal of the pacemaker and insertion into the contralateral side. Our two most recent infected pockets have been treated by local instillation of antibiotics with complete success. It is our feeling that the majority of infected pacemaker pockets can be treated successfully in this way.

Maintenance of the Pacemaker

Pacemakers are checked every six months for eighteen months with a simple rhythm strip or, in the case of the demand unit which is needed only intermittently, by brief periods of conversion of the unit to a fixed rate pacemaker. Patients are then followed every three months and elective change of units carried out at 24 months. Patients are instructed to record their own pulse rate at regular intervals and to report changes to us. Electronic determination of subtle changes in rate or

impulse configuration has not been carried out in our series. As the units become more and more reliable, elective scheduled changes of pacemakers will be done at longer intervals. We feel that it is psychologically better to change generators at a predetermined time than it is to wait for pacemaker failure. Fear of pacemaker failure is thus brought to a minimum. The emergency change of a malfunctioning pacemaker is virtually a thing of the past.

Summary

Temporary and permanent pacemaking are es-

tablished methods for treating brady- as well as certain tachy-arrhythmias. Several methods are available for temporary pacing. Some of the technical problems associated with this modality have been discussed. The permanent endocardial demand or stand-by permanent pacemaker is the preferred method of treatment on a long term basis. The reliability of such units is constantly improving and complications inherent in their use are easily recognized and readily treated in the vast majority of instances.

Temporary Pacemaking: Indications and Results

J. Edward Rosenthal, M.D. and Lawrence S. Cohen, M.D.

Introduction

Since the first use of transvenous endocardial pacing was reported by Furman and Schwedel¹ eleven years ago, an exhaustive literature has accumulated on this subject. This review will discuss the current clinical applications of transvenous pacing with an emphasis upon the role of pacemaking in acute myocardial infarction.

In the past decade many varieties of pacemakers and pacing catheters have been developed. In general usage today there are two main types of pacemakers (synchronous and demand) and pacemaking catheters (unipolar and bipolar). Asynchronous or continuous pacemakers deliver an impulse at a preset rate regardless of the intrinsic cardiac rate, whereas demand units discharge only if a spontaneous ventricular depolarization fails to occur in a predetermined time. With a synchronous pacemaker competitive rhythms may develop and ventricular tachycardia and fibrillation have been reported when the pacemaker stimulus falls in the peak of the T wave or vulnerable period of intrinsic cardiac beats.² The likelihood of this complication occurring is lessened with the use of a demand pacemaker.

The terms unipolar and bipolar refer to the number of electrodes at the catheter tip. Since current flow must be established between two electrodes, in a unipolar system a second electrode must be situated elsewhere on the body. This electrode is usually referred to as an indifferent or skin electrode. With bipolar pacing both electrodes are located at the catheter pacemaker tip and pacing is usually established with lower energy requirements. If one of the wires of a bipolar catheter breaks, the catheter can easily be used as a unipolar catheter by attaching a skin electrode. For these reasons, in emergency transvenous pacing the method of choice is a bipolar electrode catheter used with a demand unit.³ (Fig. 1).

Pacing catheters can be passed to the right side of the heart from virtually any vein large enough to accept the catheter. Common sites include antecubital veins, external and internal jugular veins, femoral vein, and subclavian vein.⁴ Antecubital and femoral vein placement are more likely to result in dislodgement of the intracardiac electrode than are the other sites. With the external jugular approach, often the catheter cannot be manipulated beneath the clavicle into the superior vena cava. The percutaneous subclavian approach as described by Davidson⁵ and Borge⁶ is routinely utilized by the authors. Venipuncture is made with a 14 gauge teflon® sheathed needle and a number 4 French bipolar pacing catheter (Cordis or Elecath)

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is passed through the needle. (Fig. 2). In utilizing this technique in over 100 patients complications have included one small pneumothorax which did not require treatment and puncture of the subclavian artery in two cases, both of which were of no consequence. In only two cases was catheterization of the subclavian vein unsuccessful.

Ideally the pacing catheter should be passed under fluoroscopic control, however in emergency situations pacemaker placement can be accomplished with electrocardiographic monitoring. This is accomplished by attaching the patient to a standard ECG machine and connecting the V lead to the external end of the pacing catheter.^{7,8} A continuous electrocardiogram is obtained as the catheter is advanced until characteristic intraventricular complexes are recorded. Pacing is then instituted. Connection to the V lead of the electrocardiograph machine should be safe as the high resistance of the ECG circuit prevents significant current flow to or from the heart. Care must be taken to insure adequate grounding of the ECG machine and total isolation of the pacing catheter from the ground.⁷

The ideal location of the electrode catheter is in the apex of the right ventricle⁹ where it can be wedged among the coarse trabeculations yielding a quite stable position. Pacing in the outflow tract of the right ventricle has been used but is less reliable.

The optimal method of catheter placement is under direct fluoroscopic control visualizing the heart in the anteriorposterior as well as lateral view in order to make certain that the electrode tip is in the right ventricle rather than the coronary sinus.¹⁰ The position of the catheter electrode can also be determined from the standard ECG. With pacing in the right ventricular apex the ECG shows left bundle branch block and left axis deviation; in the right ventricular outflow tract the pattern is left bundle branch block with a normal frontal plane axis; pacing from the left ventricle leads to a right bundle branch block pattern on the ECG.^{9,10} It is also important to select the site in the ventricle at which pacing can be accomplished with the lowest possible energy levels. Initial pacing thresholds of greater than two milliamperes should be considered unsatisfactory unless efforts have been made to achieve a pacing site where lower energies are successful in maintaining pacing.^{9,11} The pacing threshold may vary considerably in individual patients increasing as much as tenfold or more.¹² Areas of interventricular septum involved in a myocardial infarction may require considerably augmented pacing energies.

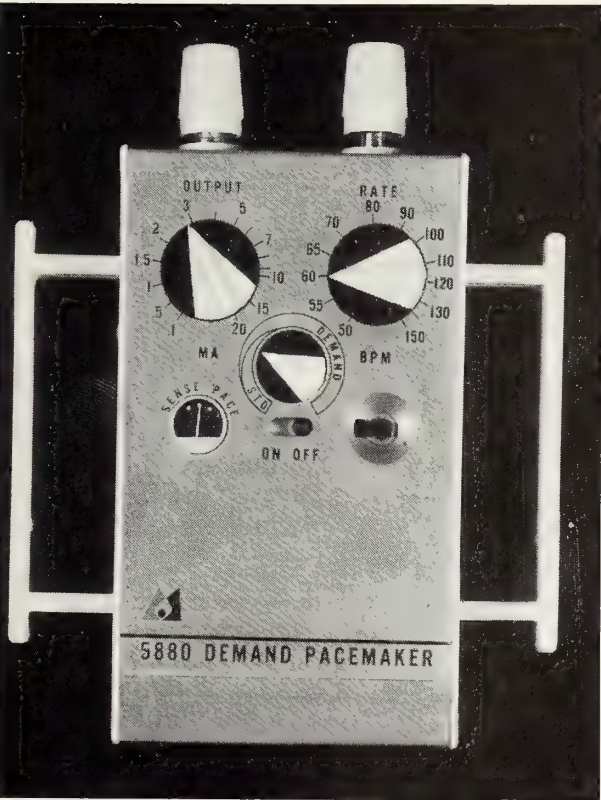


Figure 1

Demand pacemaker battery box utilized for temporary pacemaking. Output determines the energy delivered to the myocardium in milliamperes (MA). Rate is adjustable. Fixed rate or demand mode can be utilized.

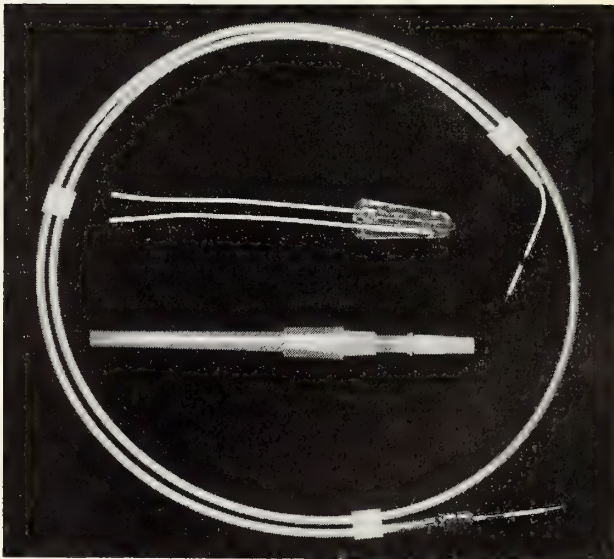


Figure 2

Pictured above is a #4 French semi-floating bipolar pacing catheter inside a holder. The curved tip contains the bipolar intracardiac electrodes. In the center is a 14 gauge needle with a plastic outer sheath and a connector which attaches the external end of the pacing catheter to the pacemaker box.

In certain patients with sinus bradycardia but with intact A-V conduction atrial pacing can be used with the advantage of maintaining the normal relationship between atrial and ventricular contraction. Pacing can usually be achieved by positioning the catheter at the junction of the right atrium and superior vena cava. More reliable capture can be obtained by placing the electrode catheter in the right atrial appendage or coronary sinus.^{13,14}

Pacing In Acute Myocardial Infarction

Much has been written in the past decade about the role of transvenous pacemakers in the course of "heart block" due to acute myocardial infarction.^{3,15-32} In spite of an abundant literature on this subject there remains considerable controversy concerning the indications for temporary pacing in acute myocardial infarction. A rational approach to this question requires a basic understanding of: 1. The anatomy and blood supply of the cardiac conduction system.

2. The meaning and implications of heart block as opposed to A-V dissociation.

3. The site of myocardial infarction and its effect upon specific rhythm disturbances.

4. The reliability of intrinsic cardiac pacemakers other than the sinus node.

The main infra-atrial conduction pathways of the heart consist of the A-V node, the common bundle of His, and the right and left bundle branches. The right bundle branch remains a distinct structure from its beginning at the summit of the ventricular septum to the apex of the right ventricle. The left bundle, on the other hand, remains a distinct structure only a short distance following the bifurcation of the common bundle (approximately 1 cm.); it then divides into an anterior radiation and a posterior radiation which form a meshwork of fine fasciculi supplying the left ventricular myocardium.³³⁻³⁷

The blood supply to the A-V node is derived predominantly from the artery to the A-V node which is a branch of the distal right coronary artery (85% of cases) or the circumflex coronary artery (15%). Collateral blood supply to the A-V node is often present and actual infarction of the A-V node is extremely uncommon.³⁸

The initial portion of the right bundle and at least in part, the main left bundle derive their blood supply from the right coronary artery. The more distal right bundle and the anterior division of the left bundle are supplied by the left anterior descending coronary artery. The posterior division

of the left bundle is usually supplied by the posterior descending coronary artery.³³

As could be predicted from the anatomy, various interruptions in the conduction system may be dependent on involvement of either the right or left coronary arteries. In inferior infarction with involvement of the right coronary artery or a dominant circumflex conduction, disturbances are usually related to interruption of A-V conduction at the A-V node. With anterior infarction conduction disturbances are more likely to be related to interruption of the right bundle branch, the anterior division of the left bundle, or both. In order to interrupt the right bundle, the anterior division of the left bundle, and posterior division of the left bundle (so-called trifascicular block),³⁹ there must be extensive involvement of the cardiac septum. This usually reflects extensive disease of both right and left coronary arteries. In post mortem studies of patients developing heart block due to myocardial infarction these findings have been the rule.^{34,38-40}

Brady-arrhythmias due to sinus node dysfunction seem to be more commonly related to vagotonia rather than anatomic involvement of the sinus node, although the accumulation of products of myocardial ischemia may be a factor relating to sinus bradycardia.

The normal pacemaker controlling the heart is the sinus node. However cells near the A-V junction (but not in the A-V node itself), in the common A-V bundle, and the myocardial purkinje cells are able to act as pacemakers (undergo spontaneous phase four depolarization).⁴¹ The intrinsic rate of these pacemakers decreases from above down, the lowest being less than 40 per minute. If the controlling pacemaker is located above the bifurcation of the common A-V bundle (His) and the distal conduction pathways are intact the QRS complex will be of normal duration, and the rate will usually be greater than 40 per minute. If the controlling pacemaker lies below the bifurcation of the bundles the QRS complex will be wide (greater than 0.12 seconds) and the rate will usually be less than 40 per minute. In addition lower pacemakers are notoriously unstable whereas pacemakers above the HIS bundle bifurcation are usually quite reliable.^{27,41}

Atrio-ventricular dissociation due to heart block must be distinguished from A-V dissociation of other causes, as the therapeutic and prognostic implications are considerably different. Unfortunately there has been much misuse of the terms heart

block and dissociation. A-V dissociation implies that the atria and ventricles are under the control of different pacemakers. Heart block is a form of A-V dissociation in which the dissociation is due to abnormalities in the conduction system. Dissociation may occur with slowing of the sinus node, acceleration of pacemakers below the sinus node; or a combination of both in the absence of any conduction abnormality. In such circumstances the ventricular rate is usually greater than the atrial rate. If the atrial rate accelerates, the potential for a conducted rhythm is still present. On the other hand, in complete heart block no impulses are conducted from the atria to the ventricles. The QRS complex may be narrow or wide depending on the site of block and the location of the subsidiary pacemaker. The ventricular rate is usually slower than the atrial rate.^{27,41,42} In addition to the above rhythm abnormalities, incomplete heart block may occur in which some atrial impulses are conducted and others are blocked. Two types of incomplete heart block are recognized, and their cause and prognostic and therapeutic implications have been written about. Mobitz type I or Wenckebach (progressively increasing P-R interval followed by a dropped QRS) is thought to imply a conduction disturbance in the A-V node and only rarely progresses to complete heart block. Mobitz type II block (stable P-R interval with intermittently dropped QRS complexes) is thought to be due to conduction disturbances in both bundles and often is a forerunner of sudden complete heart block. The ensuing pacemaker is usually unstable and asystole is not uncommon.^{27,43-46}

From the above considerations several generalizations can be made. In complete heart block due to inferior infarction the cause is usually due to interruption of conduction at the A-V node. The subsidiary pacemaker is usually above the bifurcation of the bundles, the rhythm is relatively stable and the rate is usually between 40-60 beats per minute. The QRS duration is usually normal, conduction disturbance is rarely permanent, and mortality is only slightly increased.^{23,24,26,47-49}

Nevertheless, because many of these patients will require digitalis for control of heart failure or antiarrhythmic agents for control of ventricular ectopy, our present policy is to insert a temporary transvenous pacemaker to insure adequate control of this rhythm disturbance of acute myocardial infarction. In anterior infarction with heart block the cause is usually due to interruption of both bundles (trifascicular block), the subsidiary pace-

maker is unstable at a rate of less than 40 beats per minute, the QRS complex is wide, a permanent conduction disturbance is not uncommon, the mortality is greatly increased, and temporary pacing when complete heart block occurs is the treatment of choice.^{27,43,48,50-51} In this group of patients we would also utilize a temporary transvenous pacemaker if evidence of bifascicular block occurred, e.g., right bundle branch block and left anterior or posterior hemiblock.

In reviewing the literature of acute complete heart block in myocardial infarction before and after the availability of temporary pacemakers one finds little difference in the mortality. In 1958 Cohen *et al.*,⁴⁷ reported 35 cases of complete heart block in myocardial infarction. In 25 cases consisting predominantly of inferior infarction with the subsidiary intrinsic pacemaker above the His bundle bifurcation (narrow QRS) the mortality was 48%. In 10 cases consisting predominantly of anterior infarction with the intrinsic pacemaker below the His bundle bifurcation (wide QRS) the mortality was 80%. Kostuk *et al.*,²⁹ in 1970 reported 28 cases of complete heart block in acute myocardial infarction all of whom were paced. Their mortality in comparably grouped patients was 45% (inferior infarction—narrow QRS) and 80% (anterior infarction—wide QRS). Other authors' experience has been similar and mortality with and without pacing has varied from 25-48% in inferior infarction and 60 to 100% in anterior infarction.^{3,16-18,23-27,29,30,40,43,48,49,51} From these reports it seems clear that in general the site and size of infarction rather than heart block determines the mortality. However in individual patients insertion of a temporary pacemaker can be lifesaving.

Since the major benefit of a transvenous pacemaker is to insure a particular ventricular rate, we feel there are two general indications for pacing in acute myocardial infarction. First are symptoms which are secondary to a slow ventricular rate. These are Stokes-Adams episodes, congestive heart failure potentiated by a slow ventricular rate, ventricular irritability, shock syndrome, and the presence of a slow unreliable ventricular pacemaker (wide QRS) regardless of symptoms. Second are the "prophylactic" placement of temporary pacemakers in situations which are known to be common forerunners of sudden heart block with ensuing unreliable intrinsic pacemaker and/or asystole. This includes patients who develop evidence of bifascicular block during the course of an infarction (see Table 1). It must be emphasized that each

patient must be individually evaluated concerning the indications for pacing.

The insertion of a transvenous pacemaker in the face of an acute myocardial infarction does carry some risk. However in the authors' experience of over 100 cases we have seen only occasional transient runs of ventricular tachycardia precipitated by catheter placement. Earlier reports have shown a significant incidence of ventricular fibrillation associated with pacemaker insertion in acute infarction.^{18,25,51} This experience was possibly due to the use of larger stiffer catheters. Presently the catheter of choice is a semi-floating flexible 4 French electrode catheter. In the authors' series of over 100 patients, there has been no mortality as a consequence of pacemaker catheter insertion.

Prolonged treatment with isoproterenol in lieu of a temporary transvenous pacemaker is not recommended. This form of therapy is unreliable in maintaining a constant rate and often causes serious ventricular arrhythmias. Isoproterenol has been shown to augment myocardial oxygen consumption and has been implicated in increasing the already ischemic areas of the infarcted heart.⁵² Atropine is rarely of prolonged value in complete heart block.⁵³ In other than transient rhythm disturbances it usually cannot be used because of its side effects and the development of tachyphylaxis.

How long the pacemaker should stay in once normal conduction has returned is debated. The recommendations in the literature have been from 3-21 days.³ The reoccurrence of heart block after normal conduction has returned is uncommon in the authors' experience and when it does occur should be considered due to reinfarction. Our policy is to leave pacemakers in place for 4-7 days following return of normal conduction. If abnormal conduction persists for three weeks or more following a

myocardial infarction implantation of a permanent endocardial pacemaker is recommended.

Temporary Pacing In Arrhythmias

Temporary pacing has been of great value in the treatment of certain tachyarrhythmias of both atrial and ventricular origin. Some cases of refractory episodic ventricular tachycardia and fibrillation may be successfully controlled by the use of transvenous pacing alone or in combination with various antiarrhythmic agents.^{13,54-64} Ventricular ectopy is enhanced by slow or relatively slow intrinsic heart rates.⁶⁵ By pacing the heart at a faster rate (overdrive) ventricular ectopy may be suppressed even though the paced rate is slower than the ectopic ventricular rhythm. Usually pacing is successful at rates of 80-110 although at times the heart must be driven in excess of 120 beats per minute. Beller *et al.*,⁶⁴ list the following indications for pacing to suppress ventricular ectopy:

- 1. PVC'S or runs of ventricular tachycardia refractory to drugs.
- 2. Bradycardia with ventricular ectopy.
- 3. Patients allergic to various antiarrhythmic agents or related compounds.
- 4. Patients in whom suppressive agents cause clinically apparent decreased myocardial function.

In patients with intact A-V conduction atrial pacing has advantages over ventricular pacing in suppression of ventricular ectopy, in that it is more physiologic and obviates the occasional irritability caused by a ventricular catheter.

Atrial Cardioversion

Atrial tachycardias with the exception of atrial fibrillation may be terminated by atrial pacing. There are several mechanisms by which this may occur:

- 1. The atrial rate may be increased until functional A-V block develops resulting in a slower ventricular rate.⁶⁶
- 2. Atrial fibrillation may be produced by repetitive atrial stimuli resulting in a ventricular rate which is more easily and reliably controlled with digitalis or spontaneous reversion of fibrillation to sinus rhythm.
- 3. Interruption of reentrant mechanisms may occur with stimuli falling in a critical period of the atrial cycle resulting in sinus rhythm.
- 4. Capture of the atria by pacing at a faster rate may result in overdrive suppression of the tachycardia and return to sinus rhythm when pacing is stopped.⁶⁷⁻⁷²

TABLE 1

INDICATIONS FOR PACING IN ACUTE MYOCARDIAL INFARCTION	
I. Bradyarrhythmias associated with	
A. Stokes Adams episodes	
B. Congestive heart failure	
C. Ventricular irritability	
D. Shock syndrome	
II. Third Degree (Complete) Heart Block	
A. In the course of an inferior or anterior wall myocardial infarction.	
III. Prophylaxis in patients at risk of developing sudden heart block	
A. Evidence of bifascicular damage (acute)	
1. RBBB + LAH or LPH	
2. Mobitz type II block	

Atrial pacing provides a safe means of treating certain atrial arrhythmias, and indeed may be the best treatment in patients receiving large amounts of digitalis, in patients who are at high risk of even brief anesthesia, in patients after cardiac surgery who have temporary atrial electrodes already in place, and in patients developing atrial arrhythmias during cardiac catheterization.⁷⁰⁻⁷²

Complications of Temporary Pacemakers

Temporary transvenous pacing maybe associated with some complications. Current leakage from improperly grounded electrical equipment causing ventricular arrhythmias has been reported. The presence of an intracardiac electrode leading externally presents a low resistance pathway for otherwise harmless current leakage. Electrical currents as low as 200 microamperes have caused ventricular fibrillation when applied directly to the ischemic heart, whereas it usually requires more than 1000 micro-ameres to cause a detectable shock when applied to the skin.⁷³ The pacing catheter and all persons touching the catheter must be isolated from ground. This can be accomplished by covering the pacemaker box and external electrodes with a disposable glove as suggested by Whalen *et al.*⁷⁴

Myocardial perforation by the pacing catheter has been reported by several authors⁷⁵⁻⁷⁷ but is extremely uncommon with the use of newer more flexible catheter pacemakers. In ventricular pacing arrhythmias may be caused by the mechanical stimulation of the endocardium by the catheter. This is usually alleviated by repositioning the catheter, antiarrhythmic drugs, or both. While the presence of a transvenous catheter is a source of potential septicemia this has not been a major problem with temporary pacing. Pulmonary embolization and symptomatic venous thrombosis have been an infrequent complication of temporary pacing catheters.⁷⁸⁻⁸⁰

In evaluating the inherent cardiac rate and rhythm in patients having a temporary pacemaker, a word of caution is needed. Long periods of asystole or the appearance of ventricular tachycardia or fibrillation following a brief period of asystole may occur if a functioning pacemaker is suddenly turned off. This appears to be related to the rate, energy, and duration of pacing.⁸¹⁻⁸³ The rate should slowly be decreased until a spontaneous rhythm occurs, or symptoms occur due to slowing of the heart rate. In any event the rate should not be brought below 50 per minute.

Trouble Shooting

The most common problem associated with temporary transvenous pacing is electro-mechanical failure of the pacemaker-catheter system. The exact mechanism responsible for pacing failure must be rapidly determined and alleviated with a few simple observations. Most causes of pacemaker failure can be distinguished and the necessary procedure for re-establishing pacing can be undertaken. A systematic approach which the authors have found useful can be accomplished with a minimum of time and equipment (see Table 2). Presence or absence of a pacing artifact on the electrocardiogram is determined. If pacing has stopped and an artifact is absent but the pacing unit continues to discharge one should check the connections between pacing unit and intracardiac catheter. If the pacing unit is not discharging then the batteries or the pacemaker unit should be replaced. If a pacing artifact is seen on the electrocardiogram but ventricular capture is absent or intermittent, it usually means that the electrode catheter has become dislodged or the pacing threshold has increased. This problem can usually be solved by repositioning the catheter, increasing the pacemaker energy or converting a bipolar system to a unipolar system.

Specific problems arise concerning demand pacemaker units. In some patients, especially those with acute myocardial infarction, the spontaneous intrinsic myocardial depolarization amplitude may be too low to inhibit the pacemaker.²³ In these patients, repositioning of the pacemaker usually leads to effective sensing in the demand mode. In occasional patients with high amplitude T waves these will be sensed as ventricular depolarization

TABLE 2

TROUBLE SHOOTING IN PACEMAKER FAILURE	
I. Absent Pacing artifact on ECG	
A. With continued pacemaker discharge at battery box	check connections between patient and battery box
B. With no pacemaker discharge at battery box	check batteries replace battery box
II. Pacing artifact present but ventricular capture absent or intermittent	
A. Increase pacemaker energy	
B. Check pacemaker placement	
III. Problems with the demand mode	
A. T wave inhibition	Decrease demand mode on battery box
B. Myocardial threshold too low to inhibit pacer	Reposition pacemaker catheter and/or as fixed rate pacemaker

so that the preset R-R interval will actually become the T-R interval. In such cases the ventricular paced rate will be slower than that which has been set by the pacemaker. This may be corrected by decreasing the sensitivity of the demand mode by turning the appropriate dial on the pacemaker box.

In the past ten years the use of temporary transvenous pacemakers has become firmly established. While the technique of temporary pacing is by no means the answer to all problems associated with myocardial infarction, in certain patients it has clearly proved to be life saving. As with all therapeutic and diagnostic tools a clear knowledge of the goals of pacemaking as well as recognition of the shortcomings must be understood in order to ensure their proper use.

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Dangers of Pacemakers in Acute Myocardial Infarction

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The use of temporary and permanent pacemakers for the treatment of heart block has greatly increased over the last few years. Although pacemakers have helped to prolong life in many patients, they also may contribute to the possibility of sudden death—particularly in patients with acute myocardial infarction. This danger is present not only during insertion of the pacemaker catheter but is also present during the entire time the pacemaker is utilized. During the first week after a myocardial infarction the hazards are maximal. Since fixed-rate pacemakers have been recognized to initiate ventricular tachyarrhythmias if a pacemaker stimulus falls in the vulnerable period of the T-wave, demand-mode pacemakers have been developed. These pacemakers are also dangerous because they may fail to respond properly under certain circumstances. The purpose of this report is to emphasize some of the hazards of demand pacemakers and to outline criteria for their safer use in patients with acute myocardial infarction.

Case Reports

E. C., male, 73, was admitted to the hospital on 12/19/69 because of retrosternal chest pain of five hours duration. Serial SGOT, LDH and CPK values were abnormal. The electrocardiogram showed classical changes of an acute transmural anterior wall myocardial infarction with sinus rhythm at the rate of 100 beats per minute with a PR interval of 0.16 seconds. The QRS interval was 0.14 seconds due to a complete right bundle branch block. A marked left axis of more than minus 60° was present indicative of a left anterior hemiblock. Because patients with this electrocardiographic

pattern are prone to cardiac arrest without any warning due to bifascicular involvement of the conduction system, an external, temporary pervenous ventricular demand pacemaker was inserted via the right antecubital vein. The bipolar electrode was placed in the area of the right ventricular apex. During the insertion of the catheter one of the dangerous complications, two bouts of ventricular fibrillation, occurred. The patient was successfully defibrillated both times. He was given 100 mg. Xylocaine as a bolus intravenously and then an intravenous microdrip with 2,000 mg. Xylocaine in 1,000 cc. of 5% glucose in distilled water was started.

The demand pacemaker rate was set at 80 per minute, at 1.7 mA and the patient was placed in the Coronary Care Unit. While in the Unit he had several more episodes of ventricular fibrillation treated by defibrillation. These episodes resulted from failure of the demand pacemaker. The pacemaker impulses fell on the vulnerable period of the T-wave and caused ventricular tachycardia and fibrillation (fig. 1). Because of left-sided heart failure, the patient was digitalized. The pacemaker was left in place but was turned off on standby.

On 12/20/69 at 7:50 a.m. the patient had an episode of sweating and restlessness. The monitor showed only P-waves and no ventricular complexes were present. The pacemaker was immediately turned on with good, immediate response (fig. 2). At 9:00 a.m. it was attempted to shut off the pacemaker but the patient became restless and the monitor again showed asystole followed by good response when the pacemaker was turned on again. At 1:45 p.m. the patient developed cardiac arrest due to failure of the pacemaker to capture the ventricle despite the fact that regular pacemaker impulses were observed. Chest X-ray showed the tip of the catheter somewhat displaced from the apex of the right ventricle. The pacemaker was therefore repositioned under fluoroscopy and good pacing was again obtained. At 10:30 a.m. the pacemaker was shut off and the monitor showed sinus tachycardia for approximately two minutes and then suddenly ventricular standstill occurred despite the fact that the rate of the pacemaker had been gradually decreased in order to avoid, if possible, a ventricular standstill which more likely occurs if a pacemaker with a high rate is suddenly shut off. The pacemaker was restarted with good response. At 12:45 p.m. the pacemaker was turned off again and ventricular standstill was seen. The pacemaker had to be turned on again but was ineffective. External cardiac massage was done and after a while the monitor showed complete heart block with an idioventricular rate of 40. Atropine 0.6 mg. was given intravenously as a bolus and a drip of Isuprel 2 mg. in 1,000 cc. of 5% glucose in distilled water was started. At this point the monitor revealed sinus tachycardia competing with the pacemaker. The demand mode of the pacemaker again was not functioning properly and it

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was working as a fixed-rate pacemaker. The pacemaker, therefore, was repositioned under fluoroscopy and was replaced in the apex area of the right ventricle. The pacemaker was shut off at 4:30 p.m. and it did not have to be started again. The pacemaker was finally removed on 12/25/69.

Thereafter the patient continued to improve. He was alert, asymptomatic, ambulatory and he was ready to be discharged. On 1/15/70, however, he developed chest pain again. His electrocardiogram showed ventricular tachycardia and he was in shock. Resuscitation attempts were without success and the patient died several hours later. Autopsy revealed the presence of a very recent massive anterior wall infarction and in addition there was also a subacute anterior wall infarction consistent with the time of the admission. The anterior three quarters of the entire ventricular septum was subacutely infarcted and this was the probable reason for the failure of the demand mode on multiple occasions in spite of preservation of the fixed-rate pacemaking capability.

C. S., male, 58, was admitted on 3/3/70 because of sudden, crushing substernal pain associated with nausea and vomiting. The electrocardiogram revealed sinus bradycardia of

51 with rare ventricular premature contractions and patterns of acute inferior wall infarction.

On 3/6/70 a sinus tachycardia of 130/min. with 2:1 AV block developed. Later the next day short episodes of complete AV block occurred. A bipolar catheter was therefore inserted through the right antecubital vein and the tip of the catheter was placed at the apex of the right ventricle. The catheter was connected with a temporary Metronic demand pacemaker. At 5:00 that afternoon it was noted that the patient's own beats were competing with the pacemaker. It was also noted that the demand pacemaker had failed and the pacemaker was working as a fixed pacemaker (fig. 3). Shortly later the patient developed an episode of ventricular tachycardia after a pacemaker impulse had fallen on the vulnerable period of the T-wave of its own beat. The ventricular tachycardia terminated by itself after 39 beats. It was interesting to see at the end of the second strip a pacemaker's impulse also arrived at the peak of the T-wave but this time without precipitating ventricular tachycardia. To avoid recurrence and possible ventricular fibrillation the pacemaker was shut off. The patient now showed regular sinus rhythm. The pacemaker remained on standby and

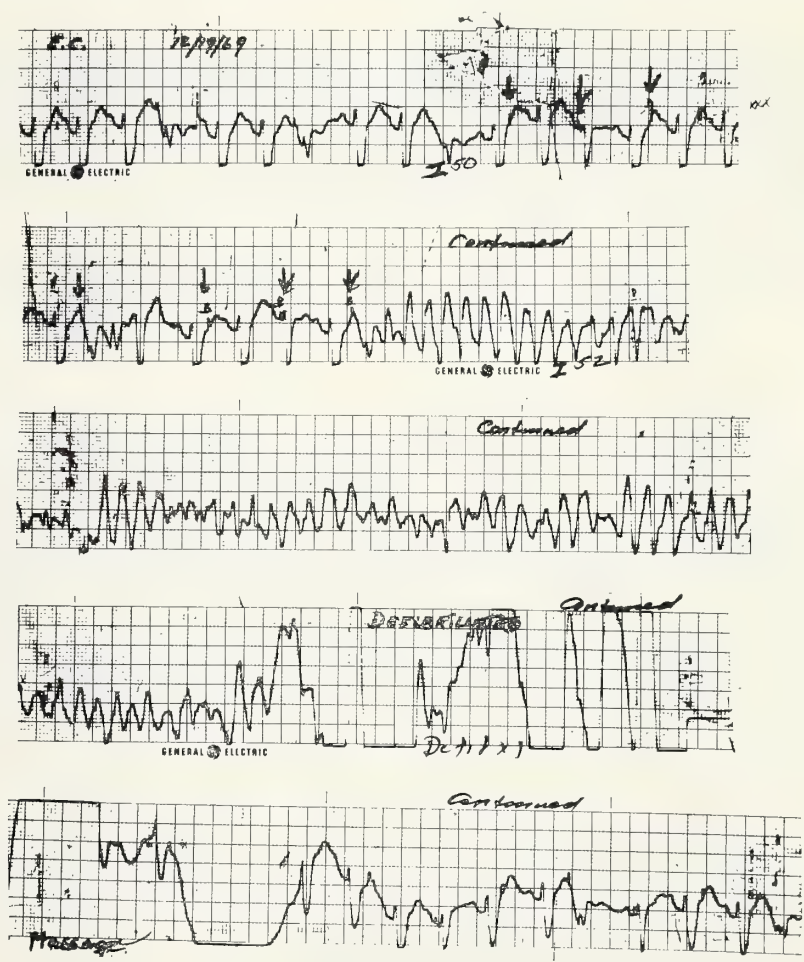


Figure 1

E.C. Anterior wall infarct with right bundle branch block and left anterior hemiblock. A demand pacemaker was inserted prophylactically. It failed, however, and worked as a fixed pacemaker sending pacemaker impulses on the vulnerable period of the T wave (↓). This eventually caused ventricular tachycardia and fibrillation. After defibrillation sinus rhythm was restored.

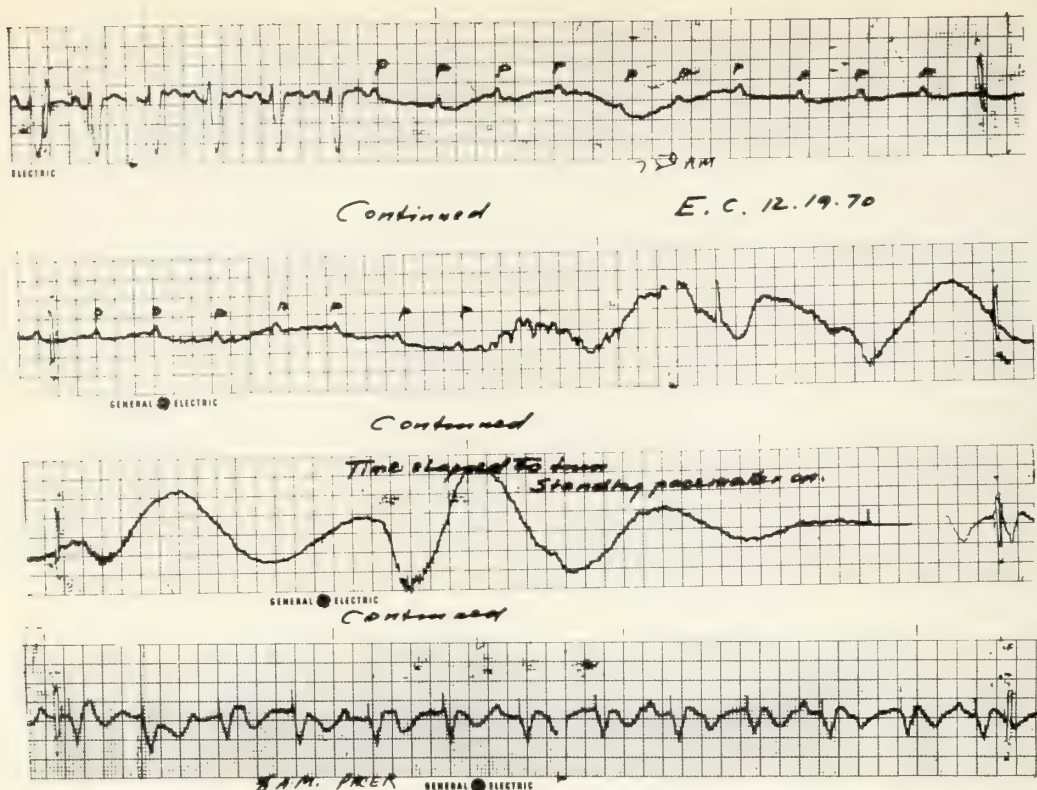


Figure 2

E.C. Sudden onset of ventricular asystole. A standby demand pacemaker was turned on and ventricular pacing occurred.

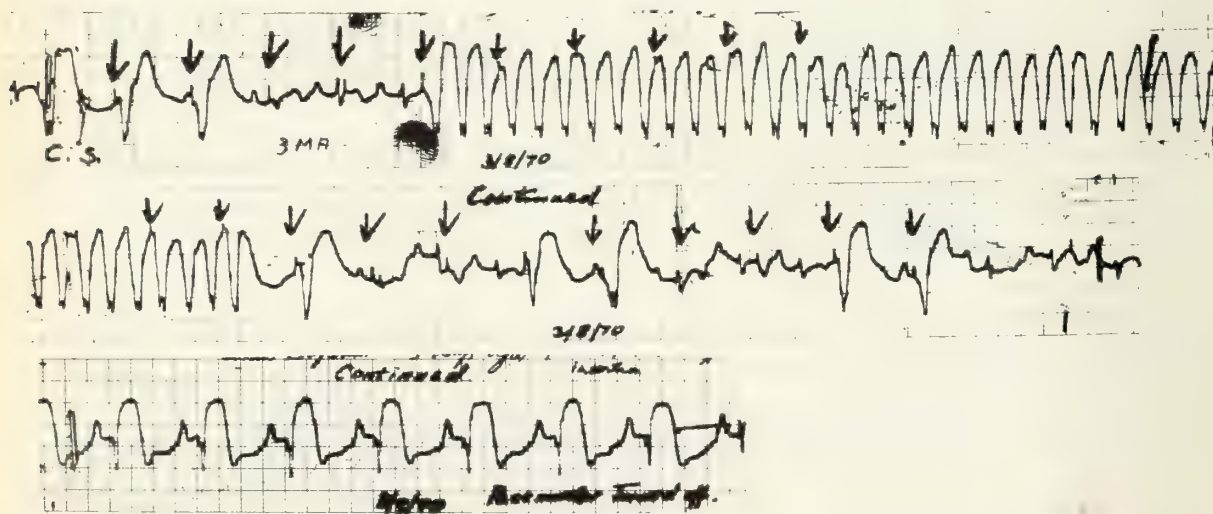


Figure 3

C.S. The demand pacemaker failed and worked as a fixed rate pacemaker. The impulse of the pacemaker falling on the vulnerable period of the T wave caused ventricular tachycardia which ended spontaneously after 39 beats. On another occasion such tachycardia was not caused by the pacemaker's impulse falling on the vulnerable period of the T wave (↓↑).

“shut-off” position until the tenth of March and was then removed.

Following removal of the pacemaker, the patient's course was complicated by hiccoughs, oliguria but no further rhythm problems occurred and the patient was able to leave the hospital on 4/1/70.

J. B., male, 41, was admitted to the hospital because of severe retrosternal pressure on 11/21/69. The initial electrocardiogram taken in the Emergency Room was completely normal but another electrocardiogram taken on the next morning showed typical signs of a transmural, inferior-lateral wall infarction.

On 11/23/69 the electrocardiogram revealed a right bundle branch block with a marked left axis deviation consistent with left anterior hemiblock. Past experience has shown that a patient with such an electrocardiogram often develops a complete atrial-ventricular block with either sudden standstill of the ventricle or very slow rate of the ventricle. A temporary transvenous pacemaker catheter, therefore, was inserted through the right antecubital vein. Shortly after the patient returned to the Coronary Care Unit it was noted that the heart rate was 110 and despite the fact that a demand

pacemaker was used, the pacemaker impulses were apparent at the rate of 60 per minute, at times falling near to the vulnerable period of the patient's own beats (fig. 4). In view of the failure of the demand pacemaker to be inhibited by intrinsic cardiac impulses, the pacemaker was turned off to avoid ventricular tachycardia and fibrillation. It was left on standby for two more days and then it was removed.

The patient's further course was uneventful. The signs of right bundle branch block and left anterior hemiblock also subsided. On 12/12/69 after several days of ambulation in the hospital, the patient was discharged in good condition.

Discussion

Ventricular tachycardia and ventricular fibrillation rarely occur with a fixed rate pacemaker in a heart without acute myocardial infarction even if stimuli fall on the downstroke of the T which is the vulnerable period (fig. 5). This is explained by the high fibrillation threshold of the nonischemic myocardium.¹ However should the myocardium

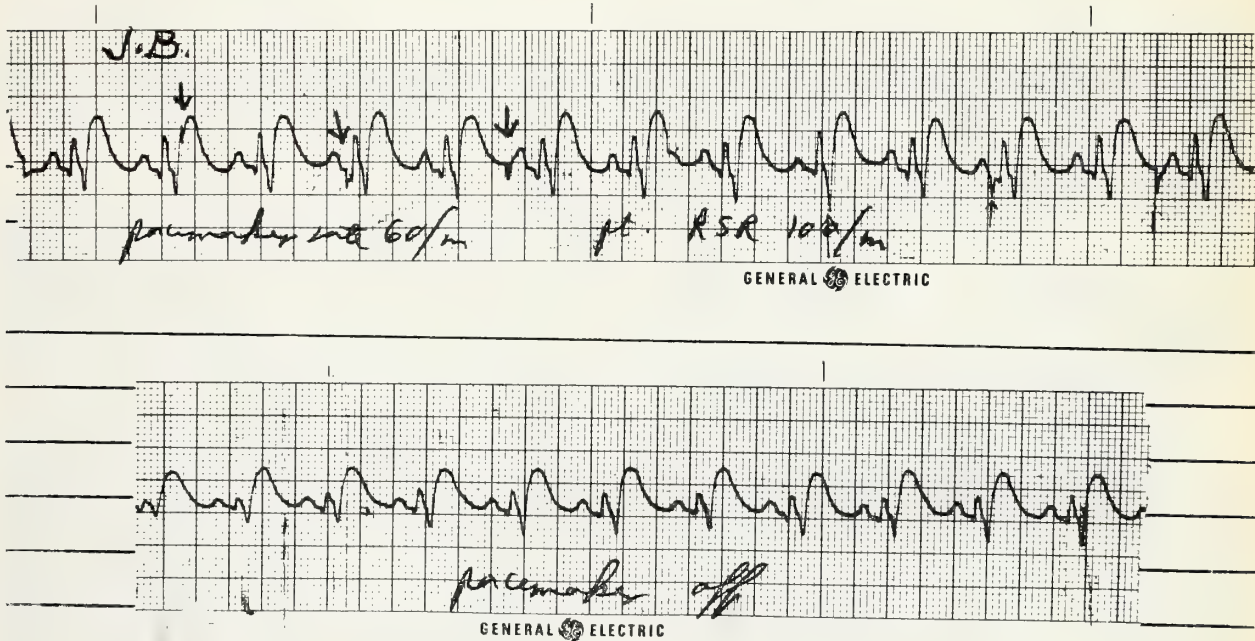


Figure 4

J.B. The temporary pervenous demand pacemaker failed and worked as a fixed rate pacemaker (↓ first row). The pacemaker was turned off but it was left on standby (second row).

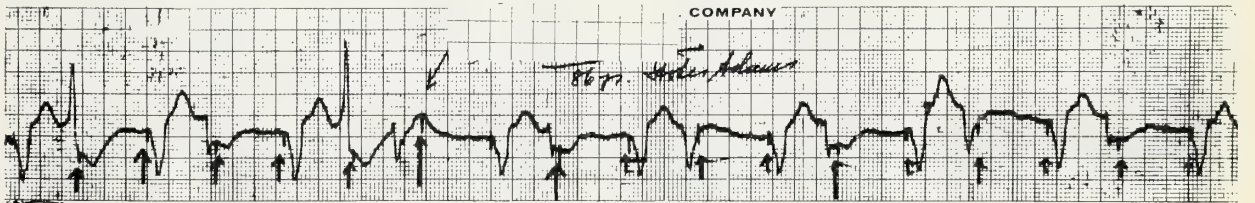


Figure 5

A.S. An 86-year old male with Stokes-Adams attacks without evidence of a myocardial infarction. A permanent fixed rate pervenous pacemaker placed the stimuli on the vunnerable period of the T wave without causing ventricular tachycardia.

of a dog be rendered ischemic by coronary artery ligation, then one can induce ventricular tachycardia and ventricular fibrillation by subthreshold stimulation in the vulnerable period.² The same vulnerability exists in adults with myocardial infarction and this renders a fixed pacemaker dangerous to such patients.

Theoretically demand pacemakers avoid this danger since their stimuli cannot fall in the vulnerable period. However there are times when the demand module may fail and therefore the unit functions as a fixed pacer. In this case a patient with heart block who returns to a spontaneous rhythm is now being paced by a fixed pacemaker and the return of the spontaneous rhythm permits stimuli to fall in the vulnerable period recreating the threat of setting up ventricular tachycardia and ventricular fibrillation (fig. 1, 3). If such patients are carefully monitored in the Coronary Care Unit, cardioversion or defibrillation can be carried out promptly (fig. 1).

The reason for failure of the demand pacemaker to shut off in the presence of a spontaneous rhythm is rarely due to a faulty mechanism of the pacemaker itself. Most commonly the pacer electrode is displaced from the apex of the right ventricle to an area which is damaged by the infarct and, there-

fore, not able to generate a sufficient signal to shut off the demand module. In other cases the pacemaker electrode may remain in the correct position at the right ventricular apex but in contact with an area of infarction. This probably occurred in our case (E. C.) with an antero-septal wall infarction. In either situation the demand pacemaker will function as a fixed rate pacemaker because the impulse necessary to deactivate the demand pacemaker module is not of sufficient amplitude. The danger of stimulating the heart in a vulnerable period with production of a potentially fatal arrhythmia will exist should the demand pacemaker function as a fixed pacemaker (fig. 1, 3). Obviously an attempt should be made to replace the electrodes of the previous catheter into an area of the heart with conduction.

The failure of a demand pacemaker can be reduced if proper precautions are used at the time of insertion of the catheter. Before returning the patient from the table the threshold of the area in which the pacemaker is situated should be taken. If it is more than 1.5 mA at the tip of the bipolar catheter, it is best moved to another area which is more responsive. A threshold of 3.0 mA should be

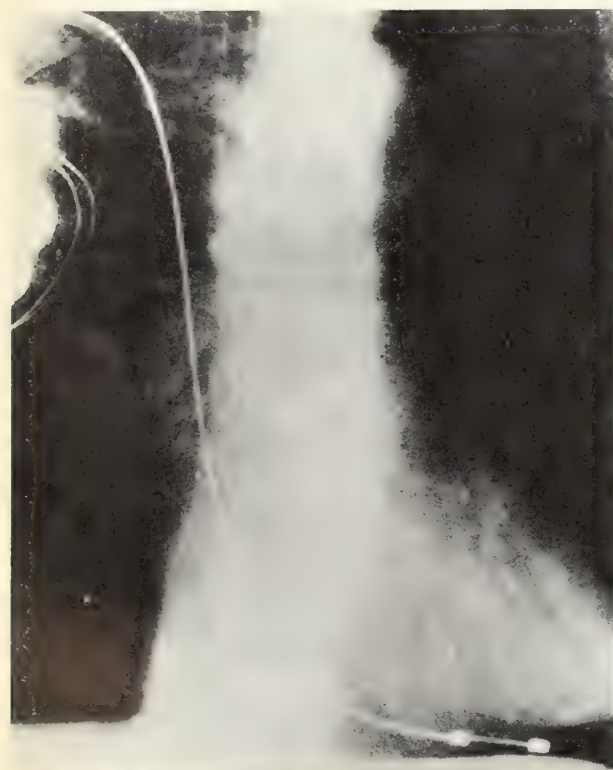


Figure 6

Normally if the pacemaker electrode is in the apex of the right ventricle the catheter transverse first a downward and then a rather straight forward course. In the lateral view the course is also downward and forward.

accepted only if a capture at a lower level is impossible. The proper anterior position of the catheter tip should be observed by fluoroscopic examination and if possible also by later X-ray films of the chest including a lateral view (fig. 6) as at times only a lateral view will disclose faulty placement of the pacemaker electrode. At the same time any redundant loop should be corrected as such a loop makes dislodgement of the catheter more likely. An intracavitary electrocardiogram with a battery-driven electrocardiograph machine is also advisable to assure a sufficiently strong intracavity signal of at least five millivolts. Subsequently a regular twelve-lead electrocardiogram should be taken at least daily for the next few days to assure the persistence of a left bundle branch block pattern with left axis deviation (deep S_2 , S_3 and S in AVF) (fig. 7).

If the artificially paced beats exhibit a right bundle branch block pattern (fig. 8) rather than the pattern described above, one should suspect either perforation of the I-V septum or dislodgement of the catheter tip into the coronary sinus or the membranous area of the I-V septum with resultant

initial stimulation of the left ventricle. Patterns of right bundle branch block may also occur if the catheter stimulates the right bundle branch and the impulse travels initially in a retrograde direction to the His bundle and then down the left bundle branch. Anatomically the upper and lower thirds of the right bundle branch lie subendocardially and adjacent to the right ventricular cavity and therefore could be easily stimulated. If the catheter is dislodged into the right mid outflow tract, the paced beats usually exhibit patterns of left bundle branch block without left axis deviation (fig. 9). If such electrocardiographic patterns appear, an X-ray of the chest should be taken including a lateral view and it will usually demonstrate the abnormal positioning of the catheter tip (fig. 10). The catheter should then be moved until the proper electrocardiogram is obtained and a sufficiently low threshold of stimulation is assured.

To decrease the possibility of later displacement, firm anchorage of the catheter should always be established by asking the patient to turn from one side to the other, by having him cough forcefully

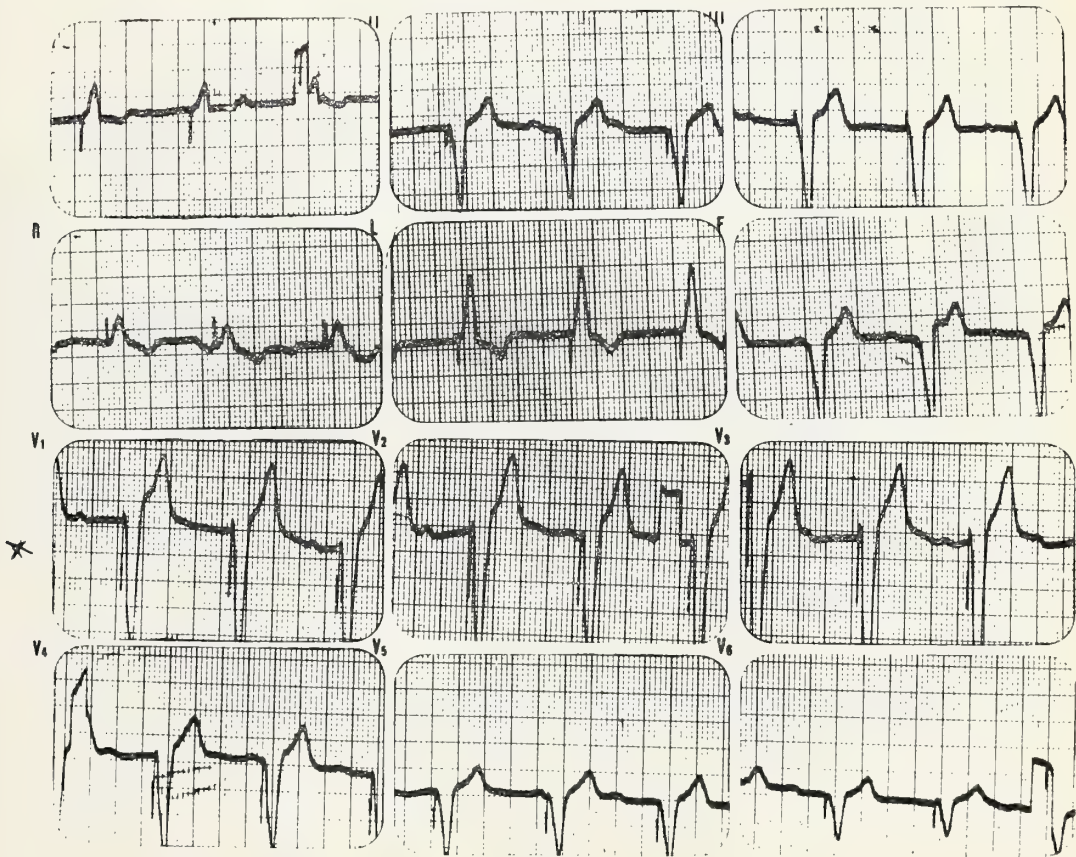


Figure 7

Electrode placed in the apex of the right ventricle produces ventricular beats with ECG patterns of left bundle branch block with marked left axis deviation (deep S-waves in leads 2, 3 and AVF).

and by introducing the catheter through the left jugular or subclavian vein instead of through the cubital vein. While the patient coughs the tip of the electrode should be observed on the image intensifier for displacement. The threshold should be rechecked and if there is any change due to turning or coughing, the electrode must be repositioned until displacement fails to return. If placement through the cubital vein is unavoidable, however, the right arm is best secured to the trunk by a binder to avoid displacement of the catheter tip by too vigorous motion of the arm. With these precautions the most common cause of pacemaker failure, displacement of the catheter tip, can be decreased. Other causes such as broken electrodes, hypokalemia, battery failure or fibrin formation at the area of contact of the electrode with the myocardium are rarely problems in temporary pacing.

In spite of these precautions demand pacemaker failures will occur and may lead to sudden, potentially fatal, arrhythmias. This danger of sudden iatrogenic death must be carefully calculated, there-

fore, against the danger of losing the patient by complete atrioventricular block with arrest or with other associated fatal tachyarrhythmias. The choice is often very difficult particularly since the advent of the Coronary Care Unit with "aggressive" treatment recommends insertion of a temporary pacemaker in the presence of second degree or third degree atrioventricular block.⁵⁻⁷

Experience in our Coronary Care Unit over the last five years suggests strongly that a patient with an acute inferior wall infarct with second degree, complete heart block or with AV dissociation and a junctional escape rhythm rarely ever needs a pacemaker as long as Atropine and/or Isuprel are able to maintain a rate of 60 or 70 beats per minute. A lower rate, however, may also be acceptable as long as the patient remains hemodynamically in satisfactory condition with a sufficient cardiac output. Judicious treatment is preferable therefore to aggressive treatment in an inferior wall myocardial infarction. This is also true in the presence of heart

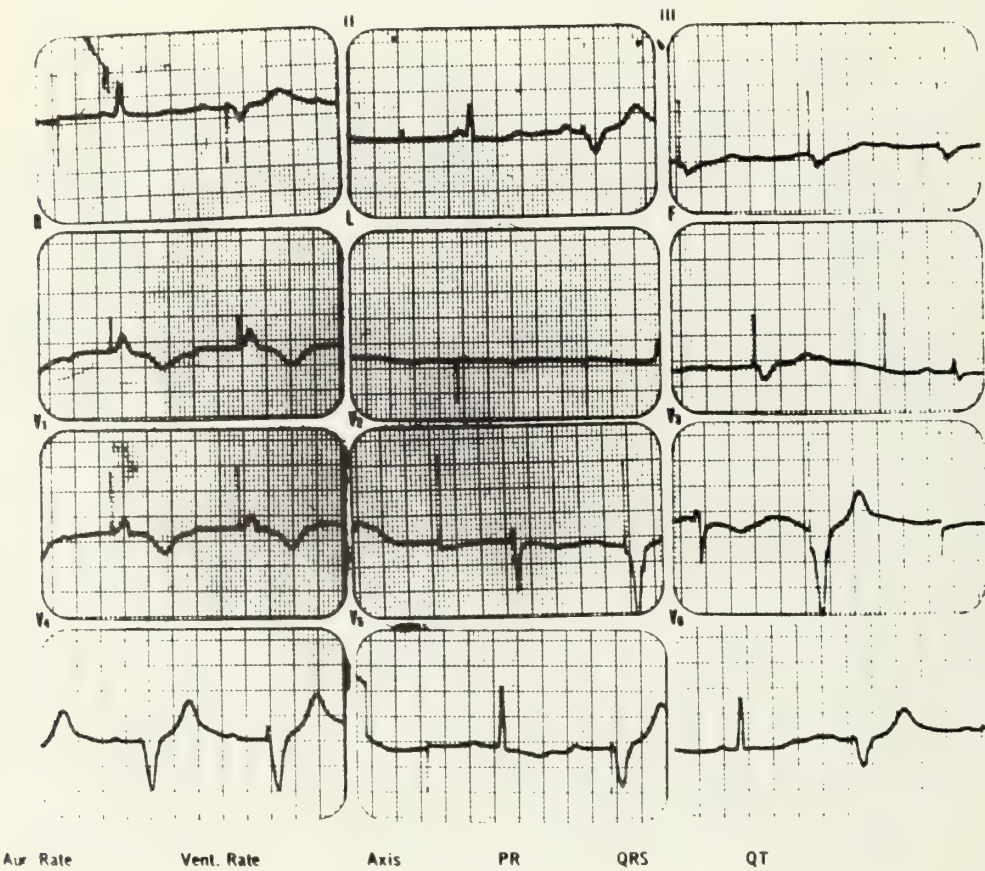


Figure 8

The artificially paced beats exhibit patterns of right bundle block in the chest leads constant with initial stimulation of the left ventricle. The pacemaker periodically fails to elicit a ventricular beat. Several AV unctinal escape beats are noted.

failure with AV dissociation with satisfactory ventricular rate.

We have treated such patients cautiously with digitalis and diuretics without any ill effect. In our experience a pacemaker, in patients with inferior wall myocardial infarction, is indicated only if one is unable to maintain a proper rate to assure satisfactory cardiac output with medication alone and if bradycardia persists with its associated tachyarrhythmias. The question of whether or not to insert a transvenous pacemaker in a patient with an inferior wall myocardial infarction and heart block is debated in the literature. While some authors indicated that their experience dictates the placement of a transvenous temporary pacemaker in any patient who develops second or third degree heart block as a consequence of a myocardial infarction,⁵⁻⁸ other investigators indicate that the overall mortality in patients with and without pacemakers after the development of heart block does not differ.^{9,10} Godman et al. found this to be also true in

patients with complete bundle branch block complicating acute myocardial infarction.¹¹

Conservative treatment, no doubt, has also some inherent dangers but in our experience the dangers are less than those caused by the insertion of a pacemaker in a critically ill patient and by the serious consequences of a possible pacemaker malfunction.

The story is different in a patient with anterior wall infarct who also has block in the right bundle and either branch of the left bundle or left bundle branch block in the limb leads and right bundle branch block in the precordial leads, or alternating right and left bundle branch block particularly if associated with a prolonged PR interval. If this came on acutely, the danger of sudden death due to cardiac arrest is greater than that from the prophylactic insertion of a pacemaker. However even when this becomes necessary one should be fully aware that there is a high rate of fatality in such patients. With and without pacing such patients often die either because of shock or because

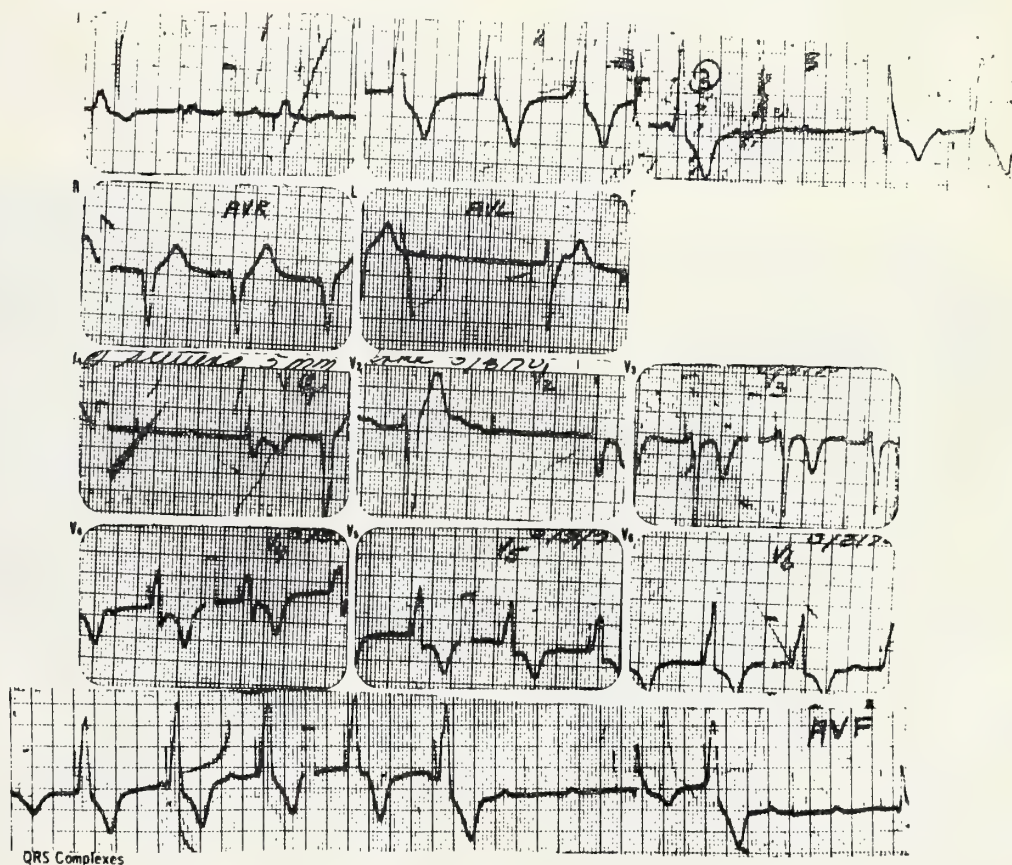


Figure 9

Displacement of pacemaker electrode into the midoutflow tract of the right ventricle causing periodic pacemaker failure. The artificially paced beats exhibit patterns of left bundle branch block in the chest leads and right axis deviation in the limb leads. Occasional AV junctional escape beats are noted.

of heart failure due to advanced myocardial damage.^{9,10} Nevertheless there are occasional patients of this type in whom cardiac arrest will occur who can be resuscitated and live on. We were able to resuscitate successfully four such patients and then insert a temporary demand pacemaker. For a week their course was stormy but they recovered and left the hospital with a regular sinus rhythm. However right bundle branch block and left anterior hemiblock persisted.

Summary

Three case histories are presented to illustrate some of the problems encountered in cardiac pacing.

If the patient has an inferior wall infarct, the insertion of a pacemaker is only necessary if the cardiac output is not maintained by Atropine and/or Isuprel regardless of the degree of AV block.

In acute anterior wall infarction with bilateral bundle branch block particularly with first degree AV block prophylactic insertion of a temporary pervenous demand pacemaker may be life saving. With or without a pacemaker the diagnosis in such patients is grave because of extensive myocardial damage leading to "pump" failure.

Patients with acute infarction requiring temporary demand pacemakers need careful monitoring to detect and correct failure of the demand

module since this can lead to death from arrhythmias.

The authors wish to thank Doctors Hyman Chernoff, Lawrence Cohen, Donald Dock, Louis Mattie, Louis H. Nahum and Charles Pitegoff, Robert Shapiro and also Mrs. Sheila Mendlestein for their great help and encouragement in making this paper possible.

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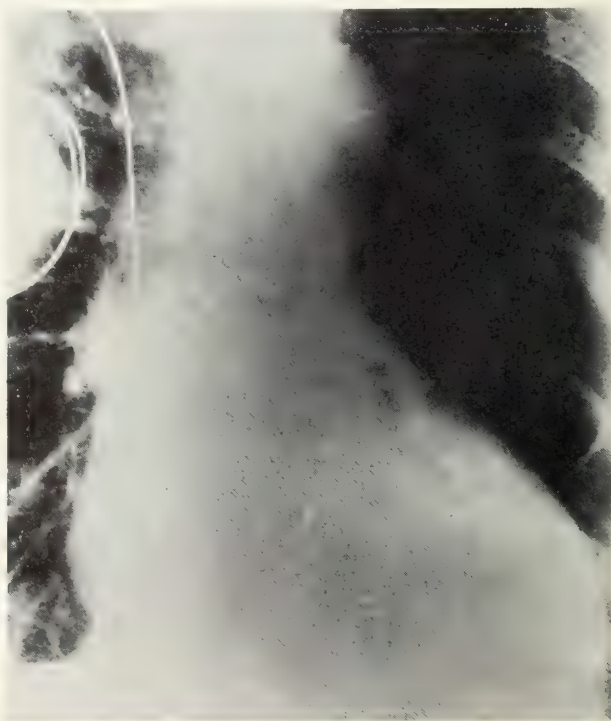


Figure 10

If the catheter perforates the myocardium, the catheter tip approaches or extends beyond the cardiac margin but otherwise the general downward and forward direction remains normal. The lateral view, however, shows an abnormal upwards and backward direction of the catheter.

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Variations of The Coronary Arterial System

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Within the considerable body of information pertaining to congenital cardiac malformations, anomalies involving the coronary arteries have received relatively little attention. Although not always patently obvious or functionally significant, some of these variations may assume considerable clinical importance. They usually occur as isolated, benign conditions, or may be a component of a number of cardiac malformations. Failure to recognize anomalies involving the coronary arteries may give rise to serious misinterpretation of cardiac catheterization data, arteriography studies, and the associated altered hemodynamics may cause troublesome effects during surgical procedures.

This manuscript summarizes a comprehensive study of the recognized anomalies of the coronary arteries.¹ It is based largely on an analysis of two hundred and fourteen cases gathered from a number of participating physicians and hospitals. A classification of these variations is presented in Table 1. Illustrations will be presented.

Minor Primary Coronary Artery Anomalies

Lesions in this group involve variations in the numbers and locations of coronary ostia, and variations of the proximal segments of the arteries, with the more distal segments following essentially normal courses of distribution. These anomalies rarely, if ever, cause physiologic impairment, but they may be difficult to locate and cannulate for angiography and cardiac surgical procedures. Further, they may be injured in the placement of cardiac incisions,

and they may influence the course of arteriosclerotic heart disease by altering the pattern of coronary artery obstruction and development of collateral circulation to the myocardium.

Normally there is considerable variation in the location of the coronary ostia within the sinuses of Valsalva. These ostia may be located centrally (normal), they may be shifted laterally toward either adjacent sinus, and they may arise at, above, or below the level of the cusp margins. Occasionally a "high take-off" ostium may be located a centimeter or more above the cusp margin, completely out of the sinus of Valsalva.

Multiple coronary ostia are frequent variations. The most common of these variations is an accessory (conus) artery arising from the right aortic sinus by a separate ostium and coursing over the right ventricular outflow tract (Figure 1-A). Less frequently, the anterior descending and circumflex coronary arteries will originate from separate ostia in the left coronary sinus, with the main (common) left coronary artery being absent (Figure 1-B).

The origin of the circumflex branch of the left coronary artery from the right coronary artery (Figure 1-C) is found more frequently when there is coexistent transposition of the great vessels than in an otherwise normal heart. Such an abnormally situated vessel may arise directly from the right aortic sinus adjacent to the ostium of the right coronary artery, or it may arise from the main trunk of the right coronary artery close to the origin of the latter vessel from the aorta. From either of these positions of origin the circumflex branch courses behind the great vessels to reach the left atrioventricular groove. Similarly, the anterior descending branch

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may arise from the right coronary artery or right aortic sinus (Figure 1-D) and then course over the right ventricular outflow tract to reach the interventricular groove. In each of these situations of anomalous origin of one of the left coronary branches, the distal pattern of distribution of this involved branch is normal and the remaining (uninvolved) left branch arises directly from the left aortic sinus.

A single coronary artery is an infrequently reported lesion usually seen at autopsy, although awareness of its potential presence should make antemortem diagnosis possible, as during coronary arteriography. This variation has also been referred to as an absent coronary artery. There are five basic distribution patterns which are described in detail in another communication.²

A similar anomaly is absence of the ostium and proximal portion of one of the coronary arteries, as in the single coronary artery, while two or three coronary vessels originate from the other sinus of Valsalva (Figure 1-F). Another variation similar to the single coronary artery is a hypoplastic proximal coronary artery (Figure 1-G). In such cases, a small ostium leads to a hypoplastic vessel, while the more distal circulation arises from the other coronary artery.

A mural coronary artery arises normally, but then lies within the myocardium for a part or all of its subsequent course. It is not unusual for a normal coronary artery to be crossed by a myocar-

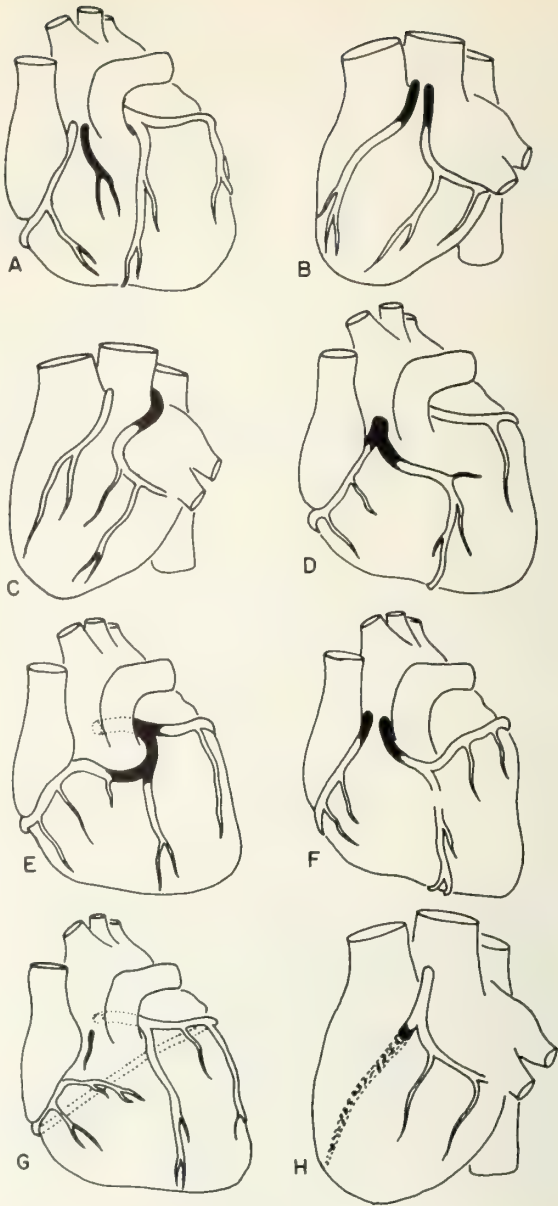


Figure 1: Minor Primary Variations

TABLE 1	
CONGENITAL MALFORMATIONS OF THE CORONARY ARTERIES	
Minor Primary Variations:	
1.	High take-off of an ostium
2.	Multiple ostia in one aortic sinus with at least one ostium in the opposite aortic sinus
3.	Variable origin of the left circumflex branch
4.	Variable origin of the left anterior descending branch
5.	Single coronary artery
6.	Absent proximal artery and ostium with multiple ostia in the opposite aortic sinus
7.	Hypoplastic proximal coronary artery
8.	Mural coronary artery
Major Primary Anomalies:	
1.	Coronary arterial fistula:
a.	Left-to-right shunt
b.	Left-to-left shunt
2.	Anomalous origin from the pulmonary artery:
a.	Left coronary artery
b.	Right coronary artery
c.	Both coronary arteries
d.	Accessory coronary artery
Secondary Anomalies:	
1.	Secondary coronary arterial fistula
2.	Variations in transposition of the great vessels
3.	Variations in tetralogy of Fallot

- A. Origin of the conus artery from the right aortic sinus
- B. Separate origin of the circumflex and anterior descending branches from the left aortic sinus
- C. Origin of the left circumflex branch from the right coronary artery
- D. Origin of the left anterior descending branch from the right coronary artery
- E. Single coronary artery
- F. Absence of a left aortic sinus coronary ostium with separate origin of the right and left coronary arteries from the right aortic sinus
- G. Hypoplasia of the proximal right coronary artery with the distal right circulation originating from the left circumflex artery
- H. Mural coronary artery

dial bridge, but these are only a few millimeters long.¹

Major Primary Coronary Artery Anomalies

The anatomic patterns within this group include those of anomalous origin and abnormal communication. These anomalies are all physiologically important, some of them being incompatible with life, the remainder being tolerated for varying periods of time from a few hours or days to a normal life span. The lesions of abnormal communication and of abnormal origin of one of the coronary arteries from the pulmonary trunk frequently have the common functional characteristics of an arteriovenous fistula in which the high-pressure coronary arterial system communicates with either a constantly or intermittently low-pressure cardiac chamber or vessel. In addition to their cardiac manifestations, these lesions are capable of manifesting most of the pathophysiology found in the peripheral arteriovenous shunts.

There are two main types of coronary arterial fistulae. The most common type is a communication between a coronary artery and the venous side of the heart, including the vena cava, coronary sinus and tributary veins, right atrium, right ventricle, and pulmonary artery. These communications result in a left-to-right shunt demonstrable by cardiac catheterization and angiocardiography. The second type is a communication from the coronary arterial system to the arterial cardiac system, including the pulmonary veins, left atrium and left ventricle. Such a fistula to the pulmonary veins or left atrium functions physiologically like a fistula to the vena cava or right atrium. However, the oxygen saturation differences detectable in the left-to-right shunt do not exist in such a left-to-left shunt, and the diagnosis must be confirmed by angiography. A fistula to the left ventricle, shunting only during diastole, is very rare. Figure 2 illustrates some of these variations.

The majority of patients with coronary arterial fistulae are asymptomatic or nearly so, and are recognized clinically by the presence of a characteristic continuous murmur over the precordium. Occasionally large fistulae may cause congestive failure or death. Chest roentgenography may show a normal heart or varying degrees of cardiomegaly. Arteriography shows dilation and tortuosity of that part of the coronary artery involved in the fistula, and usually demonstrates the shunt into the communicating vessel or cardiac chamber. Aneurysms of the involved coronary artery are common.

These anomalous communications, with an exception to be discussed under secondary variations, are amenable to surgical correction. Care must be taken to visualize the actual site of the communication, which should then be ligated and transected.

Anomalous origin of the coronary arterial system from the pulmonary artery includes four variations:

- a) the left coronary artery arising from the pulmonary artery,
- b) the right coronary artery arising from the pulmonary artery,
- c) both coronary arteries originating from the pulmonary artery,
- d) An accessory coronary artery ("third" coronary artery) arising from the pulmonary artery.

These variations are depicted in Figure 3. The first variation is relatively common, the others rare.

Patients with the left coronary artery originating from the pulmonary artery are most commonly seen in early infancy with a history of feeding difficulties, frequent respiratory infections, and rapid grunting respirations. Examination reveals tachycardia, tachypnea, gross cardiomegaly, and signs of congestive heart failure. Occasionally a murmur of mitral insufficiency is present. X-rays confirm a massive cardiomegaly due to dilatation of the left ventricle. The electrocardiogram is usually indicative of myocardial ischemia or infarction. Retrograde aortography usually shows initial filling of the right coronary artery, with subsequent filling of the left coronary artery by way of intercoronary collaterals. The flow of contrast media may continue into the pulmonary artery. In those infants presenting with severe myocardial ischemia or infarction, collateral flow to the left coronary artery is meager, and frequently inadequate for survival, with a peak incidence of death in the three-to-five months of age range.¹

Some of the patients, however, develop an adequate collateral circulation between the right and left coronary arteries in utero and early infancy (primarily the latter period), and show few or none of the characteristic signs and symptoms described previously. These patients may develop quite normally and, in fact, this type of lesion has been most frequently reported in asymptomatic adults. Cardiac enlargement is usually present, and the electrocardiogram most frequently shows left ventricular hypertrophy. Retrograde aortography shows a dilated and usually tortuous right coronary artery

emptying into abundant collateral vessels and then into the left coronary artery and pulmonary artery. This large flow from the aorta to the pulmonary artery behaves as an arteriovenous fistula with a characteristic continuous murmur over the upper left sternal border. Significant mitral insufficiency has been described in several of these patients, probably secondary to papillary muscle dysfunction associated with myocardial ischemia.

In the immature (infantile) form with inadequate inter-coronary collaterals, effective surgical therapy is probably best accomplished by anastomosis from the aorta to the anomalous left artery.³ However, the problem of vessel size is quite real in small in-

fants, and, if possible, attempts should be made to control the congestive failure medically until the child is older and more suitable for such surgery. In the mature (adult) form, with adequate inter-coronary collaterals, ligation of the left coronary artery at its origin from the pulmonary artery will increase myocardial blood flow from the right coronary system by eliminating the arteriovenous shunt. However, this procedure leaves the patient with a single coronary artery, and, again, anastomosis of the left coronary artery to the aorta with a saphenous vein graft will undoubtedly prove to be the procedure of choice.³

Anomalous origin of the right coronary artery

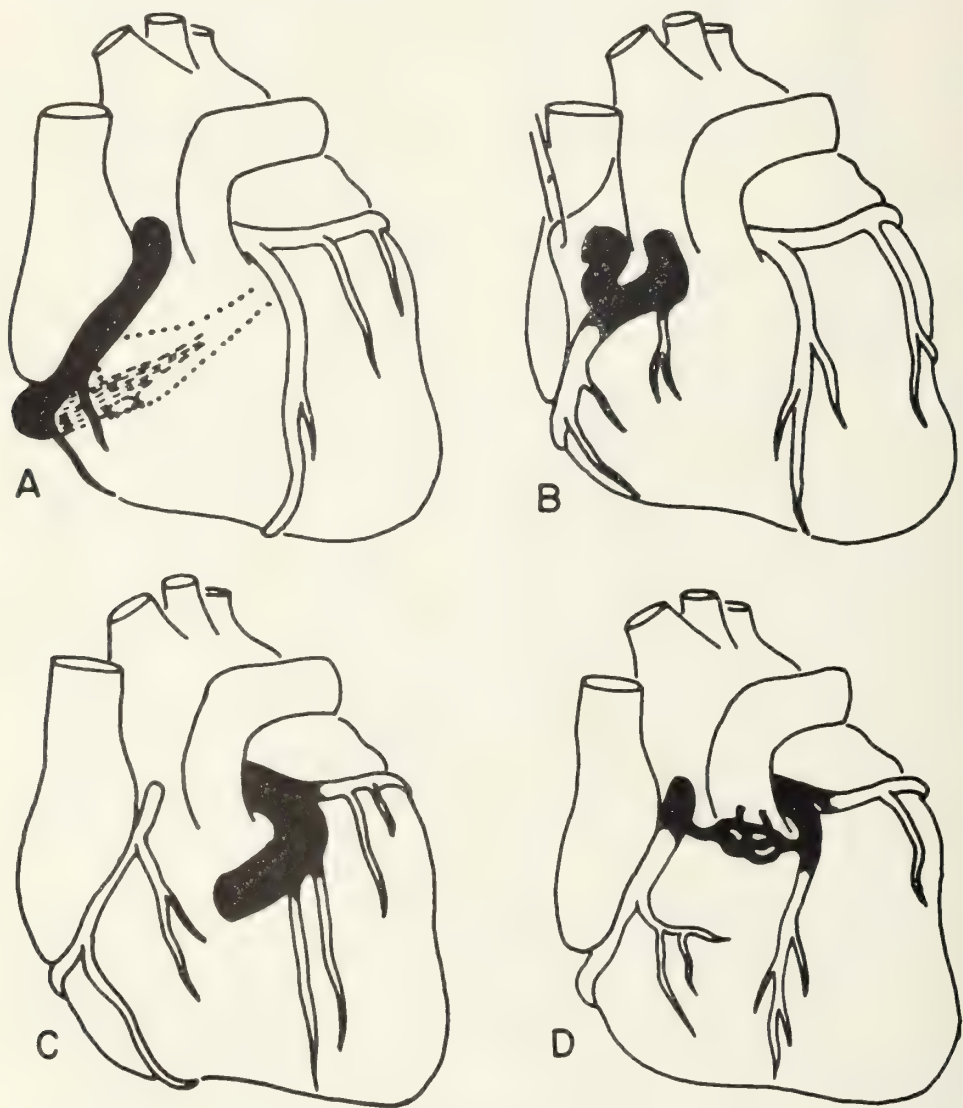


Figure 2: Coronary arterial fistulas
A. Termination in the coronary sinus
B. Termination in the right atrium
C. Termination in the right ventricle
D. Termination in the pulmonary artery



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terene, SK&F). Rarely, leukopenia, thrombocytopenia, agranulocytosis, and aplastic anemia have been reported with the thiazides. Watch for signs of impending coma in acutely ill cirrhotics. Thiazides are reported to cross the placental barrier and appear in breast milk. This may result in fetal or neonatal hyperbilirubinemia, thrombocytopenia, altered carbohydrate metabolism and possibly other adverse reactions that have occurred in the adult. When used during pregnancy or in women who might bear children, weigh potential benefits against possible hazards to fetus.

Precautions: Do periodic serum electrolyte and BUN determinations. Do periodic hematologic studies in cirrhotics with splenomegaly. Anti-hypertensive effects may be enhanced in post-sympathectomy patients. The following may occur: hyperuricemia and gout, reversible nitrogen retention, decreasing alkali reserve with possible metabolic acidosis, hyperglycemia and glycosuria (diabetic insulin requirements may be altered), digitalis intoxication (in hypokalemia). Use cautiously in surgical patients. Concomitant use with antihypertensive agents may result in an additive hypotensive effect.

Adverse Reactions: Muscle cramps, weakness, dizziness, headache, dry mouth; anaphylaxis; rash, urticaria, photosensitivity, purpura, other dermatological conditions; nausea and vomiting (may indicate electrolyte imbalance), diarrhea, constipation, other gastrointestinal disturbances. Rarely, necrotizing vasculitis, paresthesias, icterus, pancreatitis, and xanthopsia have occurred with thiazides alone.

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from the pulmonary artery is associated with no symptoms and is usually discovered at autopsy in a patient dying of an unrelated cause.

Anomalous origin of both coronary arteries from the pulmonary artery is invariably fatal immediately or within a few days after birth. Death accompanies closure of the ductus and the fall in pulmonary artery pressure and oxygen saturation.

Anomalous pulmonary arterial origin of an accessory coronary artery is unusual. In such a variation a vessel of varying size seemingly originates from the anterior pulmonary sinus and descends over the right ventricular outflow tract. Most are small. They are connected to one or both of the normally originating coronary arteries, and thus

create a left-to-right shunt. Ligation of the vessel at its origin is the procedure of choice.

The Secondary Coronary Artery Anomalies

The lesions in this group are found in association with additional congenital malformations of the heart and are considered to be compensatory or adaptive developmental aberrations.

In the presence of the combination of pulmonary valvular atresia (or severe stenosis), intact ventricular septum, hypoplasia of the right ventricle, and a normal tricuspid valve, fistulas may develop between the right ventricle and the coronary circulation.⁴ Similar coronary artery-left-ventricular communications may occur in the presence of aortic valve atresia or severe stenosis with hypoplasia of

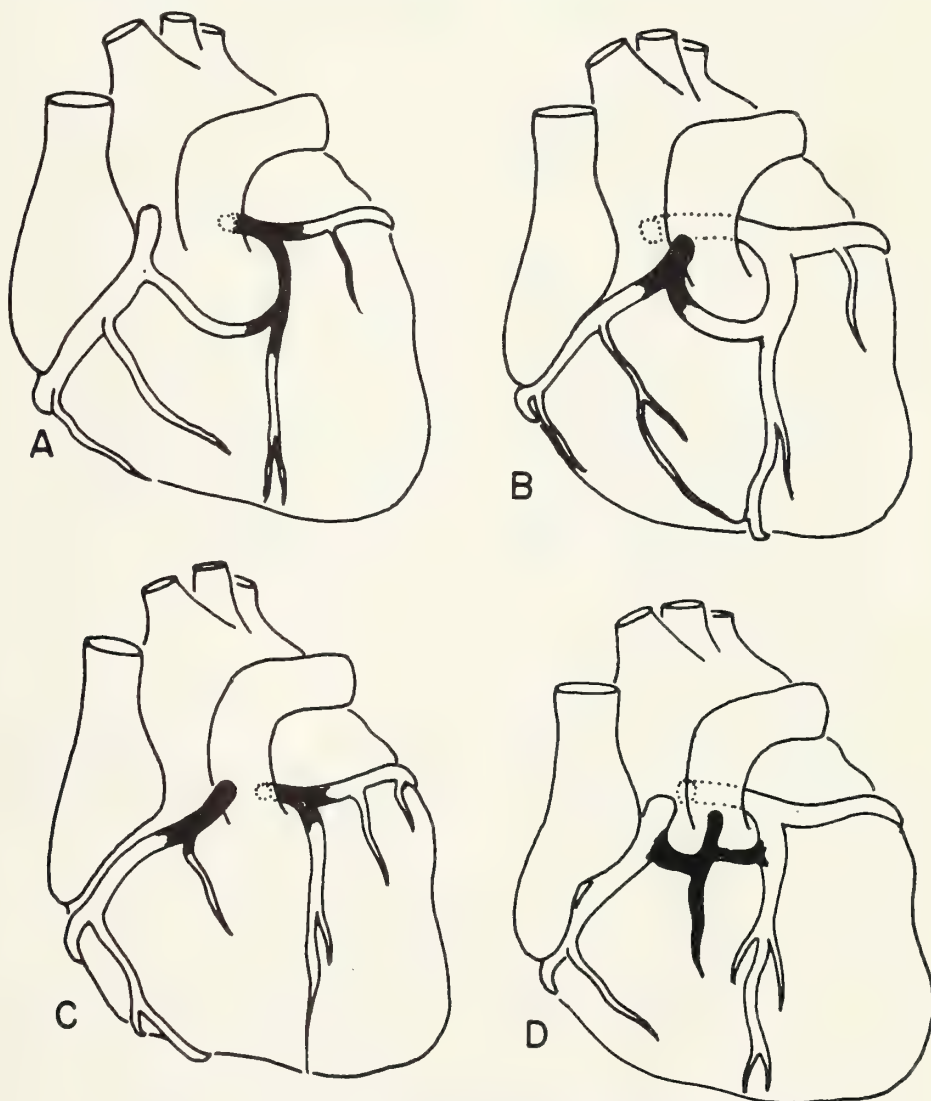


Figure 3: Anomalies of origin from the pulmonary artery involving the

- A. Left coronary artery
- B. Right coronary artery
- C. Both coronary arteries
- D. Accessory coronary artery

the left ventricle and mitral valve. The coronary artery-cardiac chamber communications in these instances serve as a means of egress of blood from otherwise completely or severely obstructed ventricles.

Anomalies of the coronary arteries are frequently seen in transposition of the great vessels and involve both the origin and distribution of the arteries. The variations encountered in association with this complex are basically a result of malposition and rotation of the aortic root, with vessels emerging from the right coronary artery and proceeding to the distribution of branches of the left, and conversely, with distal branches of the right coronary artery originating from the anatomical left coronary artery. Anomalies of origin of the

coronary arteries are also encountered, although not as frequently as discrepancies of distribution.

Anomalous coronary artery branches are frequently encountered at the site of right ventriculotomy in the repair of tetralogy of Fallot. Failure to recognize and avoid, or to ligate such a branch can lead to major complications and death.

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Routes Of Cardiac Pacing: Advantages Of The Femoral Vein Approach

It is generally agreed that the best method of cardiac pacing is transvenous. This is true not only for all instances of temporary pacing but also for most of permanent pacemakers as well. There are presently several routes for the introduction of a transvenous pacing electrode either through a cutdown or by a percutaneous technique. Cheng has now published his results on 100 patients via the femoral vein route. He found no instance of local hematoma formation, infection, thromboembolism or myocardial perforation in any of his patients.

There are currently available four basic approaches to transvenous endocardiac pacing, brachial, jugular, subclavian and femoral. The brachial approach is easiest, most commonly used because of its easy access but is undesirable because the motion of the arm results in significant intracardiac electrode displacement with loss of pacing, extrusion from the right ventricle or myocardial perforation. The pacing electrode inserted via this route may move as much as 1 to 2 inches. Even restraint of the patient's arm, uncomfortable as this is, only partially corrects this instability. This approach is also accompanied by increased incidence of thrombophlebitis and infection.

The jugular vein is the next most frequently employed approach for endocardial pacing. Although this approach is seldom accompanied by electrode displacement, it also has several disadvantages. It is not cosmetically or psychologically acceptable to some patients especially women for it involves an operative procedure around the neck and an unsightly scar. It takes time, requires some surgical skill, considerable instrumentation and cutdown. Another objection is that manipulation of the electrode catheter from this site into the right atrium is not always easy especially in older people. Lastly, it means permanent loss of the jugular vein and may compromise later plans for implantation of a permanent transvenous pacemaker.

The subclavian vein is a bedside method of pacing with ECG monitoring. It is difficult, not

precise, takes much time, may damage the apical pleura or subclavian artery and even injury to the subclavian plexus has also been reported. An embolism is rare but occasionally can be fatal. The location of the endocardial tip is not visualized and endocardial contact cannot be assured and pacing especially in the demand module may be erratic. There is risk of electrode knotting either around itself or a chorda or papillary muscle. There are other undesirable problems that arise via this route.

Percutaneous transfemoral approach fulfills all the requirements for successful cardiac pacing. Placement of electrode can be accomplished quickly on an average of 5 minutes and is particularly valuable in management of patients with acute myocardial infarction complicated by A-V block or ectopic tachyarrhythmia, Stokes-Adams attacks and refractory ventricular tachycardia where expediency in establishing a stable rhythm is of paramount importance. With the use of a fluoroscope placement of the electrode is precise and if the position needs to be changed or verified can be done quickly under direct visual control. Electrode displacement is infrequent, the patient can ambulate without any restraint and the vein is always reusable as often as necessary.

The femoral approach does not compromise later plans for permanent transvenous pacemaker implantation. The approach is much more acceptable cosmetically to the patient. It leaves no scar at entry site at the groin and is always covered by clothing. The technique is simple, can be learned by residents or other physicians without catheterizing skill. Most important of all is the fact that the procedure is safe. Cheng had no complications in 100 cases.

There were several additional advantages by this route. The electrode enters the atrium from the inferior vena cava and is particularly suited for preoperative and intraoperative rhythm control during repair or replacement of a permanent transvenous unit without risk of infection, catheter entanglements or dislodgement of a perielectrode thrombus. There can be no knotting of a temporary electrode around a permanent pacemaker catheter when the second catheter was

introduced along the same venous pathway as the first.

By approaching from the femoral vein especially if a multi electrode catheter is employed, it is a relatively simple procedure to record the electrical activity of the His's bundle and thus aid in the differential diagnosis of different forms of A.V. block including bilateral bundle branch block. With a multielectrode catheter which can be readily introduced percutaneously by this technique it is possible to record the His's bundle electrogram without the need of meticulous catheter positioning or probing.

The recording of His bundle electrogram by means of this technique is so much simplified that it can be employed routinely as a part of the diagnostic therapeutic approach to any patient who needs transvenous pacing. One can distinguish between Mobitz A.V. block type one or Wenckebach and type two which gives important therapeutic clues as well as of prognostic significance. With a multielectrode catheter one can also stimulate simultaneously either the right atrium and right ventricle and record the His bundle electrogram through the same catheter.

Finally, atrial demand pacing has been employed routinely to prevent excessive bradycardia during coronary arteriography. If the pacing electrode was introduced via the inferior instead of the superior vena cava, its presence would not stand in the way to interfere with visualization of the coronary arteries. Furthermore, if one employs percutaneous retrograde femoral arterial approach to catheterizing the coronary arteries, it will greatly simplify the procedure by introducing the pacing electrode through the adjoining femoral vein thus avoiding the cumbersome need for using both the arm and the leg.—L.H.N.

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The Central Venous Pressure (CVP)

Many years ago Sir Thomas Lewis suggested a simple, fairly accurate way to measure the pressure in the right atrium clinically. He pointed out that the sternum in most people is about 5 cm. above the right atrium. The level of blood in the jugular vein above the sternum is then

measured by dropping a perpendicular from the point to the sternum. The final reading and right atrial pressure is then this perpendicular in cm. plus 5.

The right atrial pressure serves as an index of the ratio of circulating fluid volume to cardiovascular volumetric capacity. A high ratio is seen in the failing heart. A low ratio is present in circulatory shock. This has been known for many years.

What is the clinical usefulness of knowing the pressure in the right atrium? The right atrium is downstream from a widely variable volume vascular compartment the systemic veins and the ventricles. It is upstream of the right ventricle and another vascular compartment, the pulmonary vessels, themselves subject to changes in total volume permeability. Both of these expansile vascular beds can affect the right atrial pressure.

In shock, the pressure in the right atrium will be low because of the low ratio of circulating fluid volume to cardiovascular volumetric capacity. As the above rate tends to rise to normal as a result of therapy, the pressure in the right atrium should tend to rise toward normal. In the treatment of circulatory shock not complicated by pulmonary edema, it would appear to be useful to know what the pressure in the right atrium is if the level of blood in the external jugular vein is at the level of the sternum the pressure is 5 cm. water.

If we suppose that a patient is just about to be going into pulmonary edema then for some unknown reason the permeability of the vascular bed suddenly increases with pulmonary vascular dilation, a probable preliminary state. In such a case, the right atrial pressure will be decreased below normal and by the rules we should give I.V. fluids. But if we do we will be adding to the pulmonary burden. It is only when the pulmonary vascular pathology has advanced to the point where pulmonary vascular flow-resistance is increased by the local edema that one would expect the right atrial pressure to rise. It is then a late indicator of pulmonary edema. If one relies on a rising right atrial pressure to indicate beginning of a pulmonary edema, we would always be running behind the pathological developments instead of anticipating them. In heart failure, the right atrial pressure is high and the neck veins and sublingual veins will exhibit distention. It is clear that exact measurements of right atrial

pressure might be of some value in circulatory shock uncomplicated by pulmonary edema.

People are no longer satisfied by clinical estimation of right atrial pressure. There is coming into increasing use, exact measurements made by a disposable sterile plastic central venous pressure (CVP) kit available, manufactured and marketed specifically to measure it. Routine use of CVP in all or nearly all patients receiving I.V. fluid therapy is considered "good medical practice". The concept is extremely simple and in principle so is its determination.

A catheter is introduced in one of the veins and threaded inward until it reaches the superior vena cava at the level of the right atrium. The external end of the catheter is attached via a 4 way valve to a reservoir containing a flushing solution (most often 5 percent glucose) to a manometer calibrated in cm. The patient is placed in a horizontal position and the zero level of the manometer is set to his right atrium prior to taking a reading. When the valve is positioned to allow the manometer to communicate with the indwelling catheter, the venous pressure at the level of the right atrium causing a column of flushing solution to rise in the manometer to the height of this liquid column in cm. is called the CVP. It is actually the right atrial pressure measured during the recumbency of the subject.

Unfortunately, the realities at the bedside modify somewhat the simple concept just presented. First, is the technical nuisance caused by the annoying tendency of blood to clot in the catheter. To counteract this requires repeated flushing of the catheter and its associated valve and manometer. Despite the exercise of extreme care, the catheter eventually thromboses so does the vein from the mechanical and perhaps bacterial phlebitis induced by the catheter. There is also the believability of the measurement usually taken at the bedside by a nurse. Not unusually, a nurse may be seen dutifully recording CVP readings hour after hour unaware that the catheter has long been occluded by thrombosis. Then the CVP apparatus can and does become contaminated by the repeated episode of manometer overflow due to improper positioning of the 4 way valve.

In the face of such realities, we are subjecting patients to the morbidity of exposure to repeated episodes of septic pulmonary emboli to obtain a questionably reliable bit of information, which can most often be obtained by careful clinical

observation and management. We should be wary of contributing to nosocomial pulmonary septic emboli and staphylococcal endocarditis through overemployment of CVP measurement.

In the 16th century all battlefield wounds were treated with bioling oil until Ambrose Pare, having run out of this "therapeutic" material observed that the absence of this treatment was followed by much more rapid healing of wounds. We may be dealing with a similar situation with the CVP kit. Time will tell.—L.H.N.

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How Aspirin Works

Aspirin is undoubtedly the most widely used medicine in history. However, very little has been known until recently about how its beneficial effects are achieved. It has been part of our pharmacopoeia since 1899. Its consumption amounts to about 20 billion tablets a year. To its principal therapeutic actions, anti-inflammatory, anti-pyretic and anti-analgesic has been recently added two more very important actions, anti-thrombotic against arterial thrombi and now against venous thrombi as well.¹

No explanation has been advanced for the analgesic effect but the other four actions are apparently due to aspirin blocking the synthesis of specific prostaglandins.² In recent years prostaglandins have been the subject of intensive research in many laboratories and reports of new findings involving the prostaglandins are appearing with increasing frequency in biomedical research. Prostaglandin activity has now been found in smooth muscle, in the nervous system, in adipose tissue in the ovaries, in semen and in the eye. The compounds appear to be present in practically every tissue of the body and are thought to participate in the body's defenses against infection, in the onset of labor and in regulatory mechanisms at the cell level.

There appear to be as many as a dozen naturally occurring prostaglandins, all of them long chain C₂₀ compounds that are synthesized by an enzyme system in the body from unsaturated fatty acids. The major forms, as well as many artificial analogs have also been synthesized in the laboratory. A number of substances interfere with the effects of prostaglandins in the body

and others can inhibit their biosynthesis. Recently, work under the egis of the Royal College of Surgeons in London, shows aspirin to be an inhibitor of prostaglandin synthesis.

There were two RCS research teams, one headed by T. R. Vane³ and the other composed of J. B. Smith and A. L. Willis,⁴ which independently produced evidence for the aspirin effect on prostaglandins synthesis. In Vane's experiment, cell free homogenized material obtained from guinea pigs lung was shown to synthesize two prostaglandins from arachidonic acid and a known precursor. When aspirin and related compounds were added, the prostaglandin production was reduced by an amount proportional to the aspirin concentration. Working with collaborators, Vane also showed that prostaglandin production from a dog spleen was inhibited by aspirin in a similar manner.

The experiments of Smith and Willis demonstrated prostaglandin inhibition in individual cells on a biological scale intermediate between cell-free preparation and that of an intact organ. They studied human blood platelets and they found that platelets in the blood of volunteers who had taken aspirin can no longer produce large amounts of prostaglandins. The same effect was present in isolated preparations of platelets.

These findings appear to explain much of the mystery surrounding aspirin's mode of action in the body. Several prostaglandins have been shown to induce fever and their synthesis and release may stimulate the temperature regulating mechanism in the hypothalamus. Thus aspirin may reduce fever by inhibiting prostaglandin synthesis. Anti-inflammatory effects can be explained in the same manner. Since prostaglandins have been shown recently to be involved in inflammation, prevention of their synthesis may

be the basis of aspirin's therapeutic prowess against inflammation.

By reducing inflammation, aspirin may also relieve the pain associated with swollen tissue in rheumatism and other disorders. But the more general analgesic properties of aspirin appear harder to explain. Vane finds no evidence of a link between the inhibition of prostaglandin synthesis and their analgesic activity. The RCS findings have led to speculation that the occasional failures of intra-uterine contraceptives which may work by causing local production of prostaglandins are due to the effects of aspirin. Other scientists, stimulated by the aspirin results, have recently found that several of the sedative drugs commonly prescribed to prevent miscarriage also inhibit prostaglandin synthesis and they suggest that even better results might be obtained by including aspirin in drug therapy.

Of particular importance is the RCS finding that aspirin inhibits prostaglandin synthesis in blood platelets. Prostaglandins are known to be a factor in causing platelet adhesiveness and may, therefore, be involved in arterial and venous thrombosis. Several studies are now under way to resolve the question of whether aspirin may be of use in treating these conditions. So far the results are quite favorable.¹⁻⁵

At the very least, the explanation of how aspirin works has put on a more factual basis man's tendency to treat aspirin as a universal panacea. —L.H.N.

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Emotional Stress And Hypertension

The occurrence in people with essential hypertension of an abnormally large rise in arterial pressure after physical or emotional stress has been agreed upon for several decades. Most evidence suggests that the rise of arterial pressure in such patients is not only higher absolutely but is also a higher percentage of the initial value before the stress. P. J. Mistel¹ has attempted to correlate this rise with catecholamine secretion and has just reported that patients with labile hypertension secrete more catecholamine in response to emotional stress than did control subjects. Such observations may be relevant to the etiology of essential hypertension and would be some evidence in favor of a primary disorder of the central nervous system.

The careful study of Lorimer, et al² throws some light on this question. They examined a small series of 15 normal and 15 hypertensive patients of comparable age and subjected them to a standardized emotional stress. This involved sorting out ballbearings while concentration was made difficult by discordant noises and by variation in the intensity of the lighting. They measured the B.P. and also the normal excretion rates of adrenalin and nor-adrenalin in the urine before, during and after application of this standardized stress for one hour. In respect of the B.P. response, the authors confirmed the results of most previous studies. The normal group with B.P. average of 112/80 showed a rise to approximately 126/90 during the emotional stress. The hypertensive group starting at 164/104 showed a rise during the procedure to approximately 192/118. Thus the hypertensive group showed a larger absolute and a larger relative rise of B.P. during mental stress. However, the excretion rates of adrenalin and nor-adrenalin in the urine were closely comparable in the two groups. The initial resting pre-stress value for excreted adrenalin and nor-adrenalin were virtually identical in the two groups also a finding that confirms many other previous observations.

For both men and women, the rise of adrenalin was slightly greater in the hypertensive than in the normal group, but the differences were not sufficient to be called significant. For nor-adrenalin no consistent change was seen in either group. This study was made on a rather small group of patients, however, analyses of the authors figures does not suggest that the results would have

been much different if it had been performed on a much larger series.

How can such results be best interpreted? First of all the increased response of hypertensives was not associated with an increased urinary excretion of catecholamines. Accordingly, the abnormal rise in B.P. cannot easily be attributed to an increased secretion rate of catecholamines in response to stress in these patients. Can it be that the increased "responsiveness" of the hypertensive is entirely a non-specific effect of already narrowed arterioles so that the same degree of stimulation gives rise to a proportionately larger rise in peripheral resistance and in B.P. when they are stimulated to contract by a standard stress? Whether locally applied or coming through the C.N.S. Lorimer's results are certainly in keeping with this hypothesis.

However, interpretation of such findings needs some caution. One important problem arises because of the extra ordinarily small amounts of adrenergic transmitter liberated into the blood stream with increased nervous activity. Most nor-adrenalin is reincorporated into nerve endings and much of the remainder is destroyed by local enzymes before it leaves the tissue. Then there is the fact that such catecholamine as do escape into the general circulation are metabolized quite rapidly and it has been calculated that only about 1-3 percent of an I.V. infused dose actually passes in to the urine. Accordingly, the secretion rate of even adrenalin can only be approximately assessed by studies of urinary secretions.¹

This forces us to make inferences about sympathetic nervous activity from measurements of urinary nor-adrenalin when urinary nor-adrenalin constitutes only about 0.1 percent of that actually liberated by adrenergic neurones. This does not deny that such studies can provide evidence against any increase of basal neurogenic tone or of increased sympathetic activity in response to "stress." However we need to remember that evidence provided by such means is slim and could be vitiated entirely if it were confirmed that the rate of re-incorporation or metabolism of nor-adrenalin in hypertensive patients was slightly different from that in normal persons.

However, the phenomenon might have clinical importance whatever its cause. It is well to remember that the classic hypertensive patient in

a consulting room whose B.P. is only mildly raised after some minutes rest and for whom a conservative physician might reasonably decide that hypotensive therapy was not necessary, might be very different in a stressful situation. If his response to an emotional stress was greater than that provided by sorting ball bearings under difficult conditions, we should perhaps think of such a patient as needing special protection against the possibly disastrous effects of a family quarrel for example.

This might be a reason for prescribing hypotensive drugs which can reduce fluctuations of B.P. in response to stress. Designers of future trials of hypotensive agents could usefully consider including a formal test of the ability of different drugs to reduce emotionally caused rises in arterial pressure.—L.H.N.

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The Physiologic Basis For Treatment Of Angina Pectoris

When the myocardial oxygen demand is met by the supply through the coronary arteries, no

pain is experienced. Angina pectoris, however, occurs when there is a discrepancy between myocardial oxygen demand and its supply since now myocardial hypoxia ensues. The ideal therapy then must be directed toward increasing coronary blood flow and decreasing myocardial oxygen requirements, in the presence of severe atherosclerotic coronary artery disease, the ability to dilate the coronary vascular bed is so limited that only through surgical revascularization can this be achieved. This is a formidable task. It requires a careful study by arterial visualization, the presence of a run off piece of artery to which the graft may be anastomosed. Even if successful, this procedure carries a sizeable mortality and morbidity. Accordingly, methods to decrease myocardial oxygen requirements become of primary concern.

Angina pectoris is frequently elicited by emotional or physical stress that increases sympathetic tone. By competitively blocking the cardiac receptors that respond to catecholamines, beta-adrenergic blocking agents reduce the positive inotropic and chronotropic effects of reflex sympathetic nervous system activity on the heart and have a modest but direct negative inotropic effect of their own.⁴ Thus, they produce a reduction in heart rate, tension per minute and contractility and this should be enough to decrease the minute volume of oxygen needed. This would provide an explanation for the improvement in most patients with angina after they have taken these drugs. There occurs also a decrease in the beta-adrenergic activity in the venous system resulting in reduced venous tone and this tends to reduce venous return. Such an effect could lead to a decrease in cardiac volume and further reduce myocardial tension. However, we must watch for heart failure in those patients taking large doses of beta-adrenergic blockers since there occurs loss of sympathetic support and a direct depressant effect on the myocardium. This could lead to an increase in ventricular volume and wall tension and thus increase myocardial energy requirements. In these patients digitalis and intermittent diuretics may prove beneficial while the judicious use of the beta-adrenergic blocking agents is continued.

The mechanism whereby nitrates relieve angina pectoris is still speculative. Nitroglycerin has been shown to lower arterial pressure, cardiac output, the rate of rise of left ventricular pressure and venous return.² These effects should

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serve to reduce myocardial wall tension and O₂ requirements. Whether a redistribution of blood flow in the heart or dilatation of collateral vessels also contribute to the relief of angina afforded by nitrates remains unknown. It seems fairly certain, however, that nitroglycerin causes no increase in total coronary blood flow in hearts with marked atherosclerosis. One practical point to remember about long acting nitrates is that they are poorly absorbed from a full stomach and that continued use may produce a fair degree of methemoglobin.

Digitalis is frequently recommended as a therapeutic trial in patients with angina pectoris. It is true that in patients with heart failure, digitalization commonly helps to reduce the frequency of anginal attacks. In this setting it decreases heart size and wall tension which may more than offset the increase in minute oxygen needs and result in enhancement of myocardial contraction. However, in patients without heart failure or ventricular dilatation the increase in contractility produced by digitalis augments the need for minute oxygen, leads to further differential between oxygen demand and supply thus increasing agina.³ Thus digitalis is indicated in the treatment of angina pectoris only in the presence of an enlarged heart or in association with the administration of high doses of adrenergic blocking agents.

Withdrawal of sympathetic activity to the heart can also be accomplished by stimulation of carotic sinus nerves. This also reduces heart rate, arterial pressure and myocardial contractility much as do the beta-adrenergic blockers. In fact, a recent approach to the treatment of patients with resistant angina pectoris has involved electrical stimulation of the carotid sinus nerves by an implantable radio frequency stimulator.⁴ This approach reduces myocardial oxygen need by decrease in tension development, contractility and the number of times per minute the tension is exerted. The method will probably not come into wide use because very little more can be achieved by this method than by the use of beta-adrenergic blocking drugs, especially when one like practolol will be available which acts almost entirely upon the myocardium.—L.H.N.

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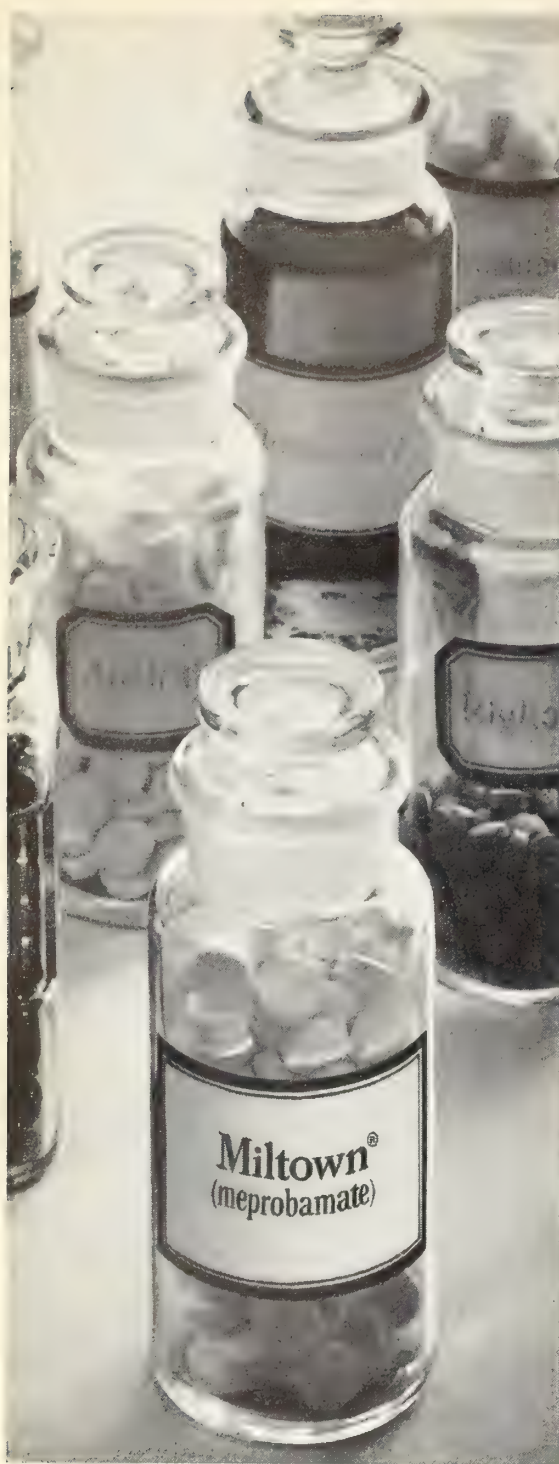
Making Genetic Changes In Human Cells

If the genetic code is truly universal, then it should be possible to make genetic changes in mammalian cells by introducing a specific gene by means of bacteriophage transduction. This is exactly what Merrill, et al¹ set out to do and apparently succeeded. They obtained human fibroblasts from a patient with galactosemia, a metabolic disorder which results from an inborn error of metabolism in which there is a congenital absence of an enzyme to metabolize galactose. They then obtained a virus which contains the complete galactose operon and another virus which renders this operon inactive. The next phase was to incubate the defective human fibroblasts with each of these viruses.

To obtain a functional enzyme from a bacterial virus, a mammalian cell would have to transcribe at least part of the phage genome into a m-RNA and then translate it into a protein. It is this transcription that was demonstrated by Merrill by the discovery of such a protein in cells from a galactosemic patient that were exposed to a virus containing galactose operon. The authors tried hard to eliminate the possibility of contaminating organisms giving rise to the data and they were satisfied that no infecting organism could account for the results they obtained.

The experiments are of the greatest and most startling interest to all biologists and if they can be independently confirmed, they will have very far reaching implications. For they appear to demonstrate that bacteriophage lambda particles or naked phage DNA genome can infect human fibroblasts, can be transcribed and translated in the milieu of eukaryotic cells and are then stably inherited as the fibroblasts multiply through many generations. This is a claim little short of revolutionary.

What have they really done^o They set out to test whether or not bacterial genes work in human cells. They have exploited a particular sort of human cell and two transducing viruses de-



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rived from phage lambda. The fibroblasts were derived from a patient with galactosemia in which the cells lack the ability to take up and metabolize galactose. The two transducing phages derived from lambda carry a galactose operon from *E. Coli*. In one the phage operon is a wild type and specifies an active enzyme (GPV transferase) whereas the other carries a mutation which inactivates the transferase enzyme.

By four to five days after infection with the phage as much as 0-2 percent of the totally labelled RNA in the cells will hybridize with lambda DNA and persist during some forty days of culturing. By contrast, almost none of the control cells or cells infected with a mutation can utilize galactose. The results suggest that it might be possible to introduce a selected bacterial gene into human cells in vivo using phage as a vehicle and significantly to alter a specific metabolic pathway.

Assuming then that this is the case, a great deal of hard thinking will have to be put into the related question of how the introduction of selected bacterial genes into mammalian cells so as to alter the recipient's metabolic pathway can usefully be applied. In addition, what hazards might arise from too indiscriminate experimentation with this system. Merrill's results are a challenge to other biologists to test them since there are innumerable metabolic defects as well as opportunities to improve existing genetic material.

Obviously there are much greater biochemical similarities between far ranging living species than had been appreciated previously.—L.H.N.

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Is There An Immunity To Cancer?

There is a growing unanimity among cancer researchers that the state of an animal's immune system crucially affects its response to carcinogenic and transplanted cancer cells. Further that the growth of cancer cells into a tumor is correlated with at least a partial failure of the immune system. However, if one of the functions of the immune system is to provide a

surveillance mechanism which can recognize and destroy cancer cells then the cancer cells must carry tumor antigens on their surface which are not present on normal cells. If this is so how then do tumors ever develop, in other words, what can be the mechanism that undermines the immune system to such an extent that tumors grow and metastasize?

Anderson, et al¹ have analyzed the role of circulating antibodies during the development of tumors in hamsters injected with simian Virus 40. Their conclusion is that cyclostatic antibodies do indeed play an important part in tumorigenesis during the early stages when they seem to prevent the rapid proliferation of the initially arising tumor cells. Once the tumor in the face of these antibodies reaches some critical mass, however, tumor antigens become in excess locally and swamp the available antibody and cell mediated immunity and there then ensues uncontrollable growth.

Ambrose² and her colleagues further investigated tumorigenesis in hamsters using SV 40. Their first problem was to devise ways of distinguishing the effects on tumorigenesis of humoral or antibody immunity responses from those of cellular immunity mediated by sensitized lymphocytes. Cellular immunity plays an important part in the defense against cancer. Non-immune animals for example can be protected against tumor cells by injections of lymphocytes from immune animals. However, the role of antibody immunity seems much more obscure and this is what Ambrose was intent on elucidating.

They placed SV 40 tumor cells in plastic containers permeable to antibodies into the peritoneal cavity of immune and non-immune animals. Circulating antibodies in the immune animal but not in non-immune hamsters retarded or prevented the proliferating tumor cells. They found further that during the first ten weeks of life, after injection with SV 40 into newborn hamsters, transformed tumor cells are present but latent and can be detected by histopathology. Furthermore, when they incubated SV 40 tumor cells with sera from normal hamsters, immune hamsters and tumor bearing animals, Ambrose proved that sera of immune animals prevented the multiplication of tumor cells in-vitro but sera from tumor bearing animals did not.

There can be no doubt that circulating anti-

bodies from immune animals is cytostatic and sera from animals with tumors lack this material. A further set of experiments established three important facts about this antibody. First, it seems to be invariably produced before tumors appear. Second, it retards tumor growth and third, it is always present in immune animals. Not only this but even though the antibody disappears as the tumor grows, it reappears in some animals when the tumor is removed surgically.

Ambrose, et al firmly believe that the so-called tumorspecific transplantation antigens are probably normal early embryonic antigens, caused to be re-expressed by transformation, and draw an analogy between the tolerance of the fetus and the survival of a tumor. They believe that immediately after exposure to a carcinogen a small tumor mass is established and may for a few hours grow without restriction. As cytostatic antibodies are produced the rate of proliferation of surviving tumor cells is greatly reduced and during the latent period the tumor mass increases only gradually. When, however a critical mass is reached, the cytostatic antibodies are locally mopped up by an excess of tumor antigen. The tumor cells can then grow rapidly producing more antigen and as this excess builds up, circulating antibody becomes undetectable and amounts of antigen always outweighs amounts of antibody unless, of course, the tumor is removed by surgery. Now once again antibody is in excess.

The scheme clearly contains many elements of speculation but it is none-the-less attractive. Many human cancers including cancer of the cervix and of the prostate have long latent periods during which cytostatic antibodies may appear. When rapid growth occurs the antibody level should drop to reappear again after successful treatment. If the SV 40 model studies by Ambrose is a valid model for immunologic reactivity to autochthonous tumors in man, then there exists the possibility of detecting cancer in the period of cytostatic antibody control.—L.H.N.

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Fate Of Men And Women With Angina

A recent report to the American College of Cardiology dealt with the prospects of 303 cases of angina. These were divided into three types. Uncomplicated angina was defined as angina that was the initial manifestation of coronary heart disease (CHD) and in which myocardial infarction the coronary insufficiency syndrome or coronary death did not occur in the same two year examination interval. The second category was complicated angina, that which developed along with myocardial infarction, coronary insufficiency or coronary death in the same 2 year examination interval. The third category was angina following myocardial infarction, which occurred at least one biennial examination interval.

It appeared that the mortality among angina victims who never develop any other manifestation of CHD is about the same as among patients who had had a myocardial infarct. Thirty percent of patients in the 55-64 age groups in both categories lived less than 8 years. Survival in men with uncomplicated angina was no better than survival after the acute stage of an infarct in persons whose angina was complicated or concurrent with a myocardial infarct.

Generally angina was found to pose only a moderate threat to women. Their mortality was only slightly greater than that of women in the general population with relative survival for a decade following the diagnosis amounting to 90% of the expected mortality in the population without angina. There is a distinct difference in the way CHD presents in men and in women. Of 323 men who developed CHD during 14 years of follow up study, 119 or over one third developed as a first symptom of angina. On the other hand, 110 of the 169 women who developed CHD developed angina as the first symptom. Almost all the women, however, had uncomplicated angina whereas only half of the men fell into this category. The men suffered more from complicated angina some first beginning to suffer angina after a myocardial infarct.

Angina tends to be a persistent source of complaint following an overt infarction. Among persons who had angina as the first sign of CHD, 29 men and only 8 women later suffered myocardial infarction. Neither men nor women lost their angina after myocardial infarction. This dispels the notion that an infarct may cure angina by making the ischemic myocardium necrotic.

Women with angina appeared to have a better prognosis than men with angina. Of 119 men, 52



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or 44 percent went on to develop a more serious manifestation of CHD, but only 17 percent of the women did so. The probability of a coronary event within 8 years of the onset of angina pectoris was about 50 percent in men over 45 or double the risk of the general population. This probability was found to be much lower in women. The relative risk seemed to diminish with age. According to the Framingham figures, every 4th man with angina could expect a coronary event in 5 years.

As could be expected, angina victims often developed other atherosclerotic syndromes in addition to their heart disease. In particular, intermittent claudication in the calf muscles occurred 5 times as frequently among angina patients as in healthy persons. In addition to other findings on mortality of angina patients it was noted that sudden death occurred in 44 percent of all coronary deaths in persons with angina. In general, mortality rates in both men and women with angina were twice as great as those of their cohorts in the general population. However, women under 60 with uncomplicated angina have much better chance of survival than do men.

On the basis of such findings and because the bulk of angina patients have major obstruction of the proximal segments of coronary arteries and a still intact myocardium, Dr. Kannel urges a controlled clinical trial to determine the efficacy of prophylactic surgical revascularization in reducing the likelihood of myocardial infarction and in prolonging survival. Obviously, such trials will probably be done on men, since the prognosis of angina in women is distinctly better than it is in men.

It is important to learn the explanation for this sex related difference in prognosis of coronary disease. If it is hormonal in nature, estrogen in post menopausal women might well be a protection against coronary disease and its progression.—L.H.N.

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Cyclic AMP

The Nobel Prize for Physiology or Medicine for the year 1971 has been awarded to Earl W. Sutherland, Jr., for his "discoveries concerning the mechanism of action of hormones." His

studies culminated in the discovery of cyclic 3'5' adenosine monophosphate (cyclic AMP), a unique molecule that mediates the action of many hormones and seems to regulate important activities in almost every cell.

He started with the question of how epinephrine stimulates the conversion of glycogen to glucose in muscle and liver. He found that epinephrine affects the first step in glycogen breakdown by catalyzing an enzyme phosphorylase. Phosphorylase can also be rendered inactive by a second enzyme and in the process there was a release of inorganic phosphate. Inactive phosphorylase is made active by another enzyme present in liver cells known as phosphorylase kinase with the aid of adenosine triphosphate (ATP). Once it was established that phosphorylase could be activated and inactivated it was clear that glycogen breakdown was controlled by relative amounts of active and inactive enzymes.

Next Sutherland demonstrated that in cell free extracts both epinephrine and glucagon promoted the accumulation of the active form of phosphorylase. This was the first demonstration of a physiologically significant effect of a hormone in a cell free extract. Accumulating in the cell-free extract of liver after epinephrine treatment was a small heat stable molecule later identified as cyclic AMP. It was this molecule that promoted the conversion of inactive phosphorylase to the active form and it is the common intermediate in the action of about half of the known hormones that control the activity of animal cells. Cyclic AMP did not accumulate, however, if the cell membrane fraction was removed from the extracts. Later studies showed that epinephrine and many other hormones acted on the outside of the cell membrane to promote the synthesis of cyclic AMP. This substance was then released on the inner surface of the cell membrane to carry out its work inside the cell. Two obstacles were now necessary to overcome. One was its chemical composition and two, how to measure its presence. The first was overcome by benefiting from David Lipkin describing a nucleotide prepared chemically by treating ATP with barium hydroxide. Lipkin and Sutherland found the substance was cyclic AMP.

The second obstacle was how to measure cyclic AMP, a difficult one and it constituted a major technical obstacle for a number of years before it was overcome. When it was, it turned

out the cyclic AMP was present in almost all cells. Since glycogen is found mainly in liver and muscle and cyclic AMP was present in all tissues, what could this substance be doing there? Sutherland examined cyclic AMP in other hormonally dependent tissues and found that many hormones cause accumulation of this substance in the target tissue. These hormones act to increase adenylyl cyclase which in turn increases cyclic AMP synthesis. One exception are the steroid hormones which do not seem to act through the cyclic AMP system.

As unicellular organisms evolved into the greater complexity of multicellular life, individual cells began to communicate with each other by chemical signals such as hormones and also by developing a nervous system. One problem that has occupied endocrinologists is how hormones instruct their target tissue to perform their specialized function. One of Sutherland's contributions is that he has made possible a unifying concept of the mechanism of hormone action. Hormones could be considered a first messenger leaving their site of synthesis and circulating to their target tissues where they are recognized by specific receptors. Sutherland sug-

gested that after the hormone combined with receptor, the activity of adenylyl cyclase present in the cell membrane increased, and the common "second messenger" cyclic AMP was generated inside the cell where cyclic AMP sensitized enzymes already present in the tissue to carry out their specialized function.

Cyclic AMP has been found to explain many puzzling biological phenomena. It acts directly at the gene level in *Escherichia coli* and other bacteria to promote synthesis of many inducible enzymes and even flagella. The known ability of glucose to repress the synthesis of various inducible enzymes in *E. coli* is due to its ability to lower cyclic AMP.

Cyclic AMP is a signal for amoeba to aggregate in what constitutes a primitive form of differentiation. Cyclic AMP controls the activity of brain cells and alterations in cyclic AMP metabolism appear also to be responsible for some of the altered properties of cancerous connective tissue cells.

One of the most impressive aspects of Sutherland's contribution is the manner in which he followed each observation to the search for its explanation by ingenious experimental design.—L.H.N.

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Dealing With Ventricular Arrhythmias

Forty percent of all deaths from a coronary attack occur within an hour of the onset of symptoms and among middle-aged and younger males, 63 percent occur within one hour.¹ Yet the median delay in admission to a hospital ward may be more than 8 hours. Hospital CCU affect the outcome in only about 10 percent of patients admitted to such units. Thus, it would appear that most patients when they reach a hospital CCU are either convalescent or moribund and the acute phase of the illness when patients are most vulnerable to sudden death is infrequently seen. Accordingly, the emphasis has now shifted from the correction to the prevention of ventricular fibrillation after a myocardial infarction. Obviously, a present we can only deal with the patient who has arrived at the hospital.

In such a patient the appearance of frequent or multifocal ventricular premature beats (VPB) is accepted as presaging the onset of more serious ventricular arrhythmia such as ventricular tachycardia (VT) or ventricular fibrillation (VF) and it is now standard practice to suppress VPB to prevent V.T. or V.F. Lidocaine is the drug most often used.² Administered as a single intravenous bolus 60-100 mg, it usually produces an almost immediate anti-arrhythmic effect lasting about 20 minutes. Repeated recurrences of VPB may then be treated by a constant infusion of lidocaine 1-4 mg per minute. However, it may take several hours to produce maximum blood levels at any given rate of infusion and this is why a loading dose is important initially.

A constant infusion may produce higher blood levels among patients with recent myocardial infarction than among healthy volunteers for the reason that such patients may have a severe reduction in cardiac output (CO) which lowers blood flow to the liver where lidocaine is mainly destroyed. Great care is therefore needed in the administration of lidocaine to patients with evidence of severe myocardial injury. Another point about lidocaine is that it is cleared from the blood rapidly after a single injection but after a lengthy infusion it may take 2-3 hours before the blood levels fall to 50 percent and therefore toxic effects of the drug such as hypotension and mental confusion do not immediately improve

when the effusion is stopped. If the VPB do not respond to lidocaine then many clinicians resort to dilantin and procainamide.^{3,4}

Adgey¹ has presented evidence that lidocaine may be less effective in the suppression of VPB in the immediate post-infarction period and the blocking agent practolol, has been found to be more effective at this time. This is consistent with the view expressed long ago by Nahum and Hoff on the role of epinephrine and nor-epinephrine in the production of ventricular arrhythmias. Blocking the actions of these hormones should indeed be effective in prevention of V.P.B. in the early stages of infarction.

The importance of correcting bradycardia during the immediate post-infarction period in the stabilization of heart rhythm has also been emphasized and is the subject of cardiac pacing in the first three papers in this issue. The problem of apparently drug resistant recurrent V.F. is rare but taxing. The role of overdrive suppression in which the heart rhythm is stabilized by electrical pacing at a rate slightly faster than the existing rate has been evaluated and may help to avoid the need for large doses of anti-arrhythmic drugs with their attendant negative inotropic effects and the risk of producing myocardial suppression.

The case for the routine administration of anti-arrhythmic agents in the prophylaxis of ventricular arrhythmias is still not proven. To be sure, two investigations in which lidocaine was given in a dose of 2 mg and 2.5 mg per minute seemed to show a significant reduction in the incidence of VPB and V.T. over the control groups. The absence of V.F., however, raises the possibility that these patients were already past the period of maximum ventricular irritability. Furthermore, a third trial showed no reduction in the incidence of VT and V.F. over a control group when lidocaine was infused at rates of 0.5 and 1 mg per minute after a loading dose of 60 mg. Oral procainamide although shown to reduce the incidence of VPB and VT has also not been proved to reduce the incidence of cardiac arrest.⁵

It may well be that the correlation of VPB with the tendency to develop V.F. may be less close than was thought. It may be said that as of now it seems to be that there is no proof that routine administration of any of the available anti-arrhythmic drugs in acceptable low doses will reduce the incidence of cardiac arrest.—L.H.N.



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SUMMARY OF ACTIONS Wednesday, October 20, 1971

I. Attendance

Present in addition to the Chairman, Dr. K. F. Brandon, and the Vice-Chairman, Dr. D. A. Grendon, were: Drs. Weber, Jr., Spitz, Backhus, Nolan, Granoff, Gardner, Hess, Bradley, Johnson, Ragland, Jr., Harwood, Wilson, Roch, Van Syckle, Friedberg, Luby, Harkins, LaBella, Root, Jr., Freedman, and Klare.

Also present were: Mrs. Lindquist, Mr. Olson (FCMA), Mr. Sullivan, Mr. Tomat and Dr. Richards.

Absent were: Drs. Cramer, Fabro, Dean, Rem, Pelz, Palomba, Nemoitin, vonGlahn and Dambeck.

II. Routine Business

Approval of Minutes

As printed and distributed, it was VOTED to approve the minutes of the meeting of September 15, 1971.

Life Memberships

It was VOTED to approve applications for Life Membership received from the following eligible Active Members:

Richard R. Barber, 77 Bedford Street, Stamford (F)—1/1/72

Geza O. Benkovich, 372 West Street, Rocky Hill (H)—1/1/72

Isidore Hendel, 336 Pequot Avenue, New London (NL)—1/1/71

Joseph G. Hennessey, 482 Brewster Street, Bridgeport (F)—1/1/72

Harold H. Irwin, 158 Williams Street, New London (NL)—1/1/72

David L. Lieberman, West Main Street, Chester (M)—1/1/72

Date of Next Meeting

The next meeting of the Council is scheduled to be held on Thursday, December 9, 1971.

III. Old, New and Special Business

Election of Student Members

It was VOTED to elect to Student Membership

15 Connecticut residents who are enrolled in American medical schools. A listing of these elected will be published in an early issue of the Journal.

Resignations, Appointments, Etc.

(a) *Cancer Coordinating Committee*: It was VOTED to accept the resignation of William A. Whalen, Willimantic, as a member of the Committee. No replacement was made.

(b) *Committee on Hospitals*: It was VOTED to accept the resignation of David L. Warren, Manchester, as a member of the Committee. It was further VOTED to defer consideration of appointing a replacement until it has been determined whether a physician suggested by the Committee on Hospitals would be able to serve if appointed.

(c) *Committee on Drug Abuse Education*: It was VOTED to confirm acceptance of the resignation of Jacob deJong, Newtown, as chairman and as a member of this Committee, and it was further VOTED to appoint Donald L. Pet, Hartford, currently a member of the Committee, to serve as chairman for the balance of 1971-72. Finally, it was VOTED to appoint Clayton B. Weed, Stamford, as an added member of the Committee.

(d) *At-Large Delegate to Council of New England State Medical Societies*: It was VOTED to accept for filing notice given by President Weber that he has appointed Kenneth F. Brandon, Hartford, as an at-large delegate to CNESMS replacing Reginald C. Edson, formerly of West Hartford, resigned.

(e) *Child Abuse Advisory Committee, State Health Department*: At the request of the State Health Department, which is reorganizing this CAAC, it was VOTED to redesignate Edward T. Wakeman, New Haven, as the CSMS representative on the Child Abuse Advisory Committee.

(f) *Committee on Rehabilitation*: It was VOTED to appoint Susan B. Spencer, Torrington, as a member of the Committee on Hospitals to

serve on the Committee on Rehabilitation(in accordance with the Bylaws) to replace Reginald C. Edson, formerly of West Hartford, resigned. This appointment is for the balance of the term 1971-72.

- (g) *Representative, Council of Public Responsibility in Health Care:* The subject Council is being formed under the auspices of the Connecticut Association of Extended Health Care Facilities, and a request was received for the Society to appoint a representative to serve on same. It was VOTED to appoint Kurt Pelz, Clinton, as such as CSMS representative.

Communication re Connecticut Institute of Health Manpower Resources

It was VOTED: To receive for filing a letter concerning the organization and activities of the CIHMR, received from Ronald S. Backett, Hartford, Chairman of the CSMS Committee on Health Careers and a recently-appointed Director of the Institute; to, on Dr. Beckett's recommendation, endorse the concept of the Institute as an agency to recruit qualified people into health careers; and to apprise the Sections of the Society of such endorsement. It was the opinion of the Council that, operating on minimum budgets for postage, etc., the CSMS Sections would not be in a position to make unit contributions in support of the Institute. It was felt, however, that some of the specialty societies might have funds for this purpose and it will be suggested to Dr. Beckett that the Institute could solicit funds from these societies directly using the Council's endorsement of the concept as a credentials reference.

Communication—Connecticut Blue Cross

It was VOTED to receive for filing a letter received from Mr. Joseph F. Duplinsky, CBC President, in which the Council was informed that the Blue Cross Executive Committee felt obliged to refuse the Council's request that up to six members (out of twelve) of a newly-formed CBC Medical Advisory Committee be designees of the Society. Established CBS policy was given as the reason for not granting the Council's request. The MAC will be composed of practicing physicians and will advise the Corporation concerning policy matters such as utilization review.

Reports—Committee on Hospitals

- (a) It was VOTED to receive for filing a progress report filed by the Committee concerning a survey being made of the attitudes of hospital staffs toward the CSMS position on expanding the

use of "combined (obstetrical) units" to include clean cases other than those of a gynecological nature.

- (b) It was VOTED to receive for filing a report of the Committee which outlined a program for establishing liaison between the Council and hospital medical staffs. The outline had been requested by the Council. Expressing the opinion that the program proposed, being statewide and quite formal, might be difficult to implement effectively, it was VOTED to refer the report back to the Committee for further study, the members of the Council who are members of the Committee being asked to transmit verbally the sense of the Council's discussion of the report to their Committee colleagues.

Resolution re "Due Process in Review Proceedings"

It was VOTED to adopt a resolution on this subject, submitted by J. Alfred Fabro, Torrington, and to transmit the resolution to the House of Delegates on 11/17/71 with Council recommendation for adoption by the House. In essence, the resolution calls for "due process" to be embodied in all procedures set up to review the professional conduct of physicians, whether such review is being made by peers under the auspices of a medical association or of a hospital medical staff.

Medicaid Program

- (a) *Liaison Committee with State Welfare Department:* It was VOTED to receive for filing a copy of the memorandum sent to all members of the Liaison Committee by its chairman, Charles Polivy, Hartford, which, in brief, indicated that neither the Liaison Committee nor the Title XIX Medical Advisory Committee was being utilized by the Administration or concerned Departments and that the non-utilization appeared likely to continue.
- (b) *Communication, Commissioner of Welfare re Title XIX Medical Advisory Committee:* It was VOTED to receive for filing a letter from Commissioner Henry C. White, of the State Welfare Department, in which the Commissioner announced his intention to form a new Title XIX Medical Advisory Committee, included a list of names from which he proposed to select the members of the new MAC, and requested Council "consideration" of same. Noting that the existing MAC (more than one-half of whose members were nominated by the Council in 1970) has not yet been discharged

An epidemic that's striking home...

gonorrhea

There were almost 6,000 reported cases of gonorrhea
in the Constitution State last year...
more than one-fourth of them in New Haven alone

In Connecticut...and everywhere else...
a new alternative

NEW Trobicin[®]
SPECTINOMYCIN DIHYDROCHLORIDE,
PENTAHYDRATE, UPJOHN

**single-dose treatment for
intramuscular use only**

a chemically distinct antibiotic indicated specifically
for treatment of acute gonorrhea:

in the male—acute urethritis and proctitis

in the female—acute cervicitis and proctitis

when due to susceptible strains of *N. gonorrhoeae*

High cure rate:* 96% of 571 males, 95% of 294 females

(Dosages, sites of infection, and criteria for diagnosis
and cure are defined on page 3 of advertisement).

**Assurance of a single-dose, physician-controlled
treatment schedule**

**No allergic reactions occurred in patients with
an alleged history of penicillin sensitivity
when treated with Trobicin, although penicillin
antibody studies were not performed**

**Active against most strains of
Neisseria gonorrhoeae in vitro (M.I.C. 7.5-20 mcg/ml)**

**A single two-gram injection produces peak serum
concentrations averaging about 100 mcg/ml in
one hour** (average serum concentrations of 15 mcg/ml
present 8 hours after dosing):

*Data compiled from reports of 14 investigators.

NOTE: Antibiotics used in high doses for short periods of time
to treat gonorrhea may mask or delay the symptoms of incubating
syphilis. Since the treatment of syphilis demands prolonged
therapy with any effective antibiotic, and since Trobicin is not indicated
in the treatment of syphilis, patients being treated for gonorrhea
should be closely observed clinically. Monthly serological follow-up
for at least 3 months should be instituted if the diagnosis of
syphilis is suspected. Trobicin is contraindicated in patients previously
found hypersensitive to it.

For full prescribing information, including contraindications, warnings
and precautions, please see last page of this advertisement.

Upjohn

The Upjohn Company, Kalamazoo, Michigan 49001

Trobicin and the gonorrhea challenge

An accelerating epidemic— a decelerating susceptibility to penicillin

Gonorrhea is now the most prevalent reported communicable disease in the nation. The estimated number of new cases of gonorrhea in the United States exceeded two million for the first time in 1970. To compound the problems, strains of *N. gonorrhoeae* increasingly resistant to penicillin and other antibiotics are appearing throughout the country. Schedules of treatment which were effective only a few years ago now result in a significant percentage of treatment failure. *In vitro* studies have demonstrated that resistance of *N. gonorrhoeae* may also develop to Trobicin.

Thus, while aqueous Procaine Penicillin G remains the drug of choice for the majority of patients, the need for a non-penicillin, intramuscular antibiotic for acute gonorrhea in the male and female is abundantly clear. Such an antibiotic should be effective following a single intramuscular injection—and it should not demonstrate cross-resistance with penicillin

Trobicin—a new alternative specifically for the treatment of acute gonorrhea

Trobicin is indicated in the treatment of acute gonorrheal urethritis and proctitis in the male and acute gonorrheal cervicitis and proctitis in the female when due to susceptible strains of *N. gonorrhoeae*.

High cure rates:

96% of 571 males, 95% of 294 females

Clinical Results with Single-Dose Treatment, Intramuscularly* (Data compiled from reports of 14 investigators**)

	Dosage	Number of Patients	Number Cured	Percent Cured
Adult Males: Gonorrheal urethritis	2 grams	475	457	96%
	4 grams	96	93	97%
Adult Females: Gonorrheal cervicitis	4 grams	294	280	95%

Diagnosis was confirmed by cultural identification of *N. gonorrhoeae* on Thayer-Martin medium in all patients. Criteria for cure: negative culture after at least 2 days post-treatment in males and at least 7 days post-treatment in females. Any positive culture obtained post-treatment was considered evidence of treatment failure even though the follow-up period might have been less than the periods cited above under "criteria for cure" except when the investigator determined that reinfection through additional sexual contacts was likely. Such cases were judged to be reinfections rather than relapses or failures. These cases were regarded as non-evaluable and were not included in the table above.

No allergic reactions occurred in patients with an alleged history of penicillin hypersensitivity when treated with Trobicin, although penicillin antibody studies were not performed.

Chemically distinct

Trobicin is structurally not related to any other antibiotic commonly used to treat gonorrhea.

The assurance of a single-dose, physician-controlled treatment schedule

Intramuscular injections should be made deep into the upper outer quadrant of the gluteal muscle.

Adult male: Single 2 gram dose I.M. in acute gonorrheal urethritis. Single 4 gram dose I.M. (should be divided between two gluteal injection sites) in gonorrheal proctitis and in patients being re-treated after failure of previous antibiotic therapy. In geographic areas where antibiotic resistance is known to be prevalent, initial treatment with 4 grams intramuscularly is preferred.

Adult female: Single 4 gram dose I.M. (should be divided between two gluteal injection sites) in acute gonorrheal cervicitis and proctitis.

Safety for use in pregnancy has not been established, nor has safety for use in infants and children.

The following reactions were observed during the single-dose clinical trials: soreness at the injection site, urticaria, dizziness, nausea, chills, fever and insomnia.

During multiple-dose subchronic tolerance studies in normal human volunteers, the following were noted: a decrease in hemoglobin, hematocrit and creatinine clearance; elevation of alkaline phosphatase, BUN and SGPT. In single and multiple-dose studies in normal volunteers, a reduction in urine output was noted. Extensive renal function studies demonstrated no consistent changes indicative of renal toxicity.

*4-gram doses were injected in two gluteal sites.

**Medical Research Files, The Upjohn Company

a chemically distinct antibiotic indicated
specifically for treatment of
acute gonorrheal urethritis and proctitis in males
and cervicitis and proctitis in females
when due to susceptible strains of *N. gonorrhoeae*

new **Trobicin[®]**
**STERILE SPECTINOMYCIN DIHYDROCHLORIDE
PENTAHYDRATE, UPJOHN**
single-dose treatment for intramuscular use only

Sterile Trobicin[®]

(spectinomycin dihydrochloride pentahydrate)—For Intramuscular injection: 2 gm vials containing 5 ml when reconstituted with diluent. 4 gm vials containing 10 ml when reconstituted with diluent.

An aminocyclitol antibiotic active *in vitro* against most strains of *Neisseria gonorrhoeae* (MIC 7.5 to 20 mcg/ml). Definitive *in vitro* studies have shown no cross resistance of *N. gonorrhoeae* between Trobicin and penicillin.

Indications: Acute gonorrheal urethritis and proctitis in the male and acute gonorrheal cervicitis and proctitis in the female when due to susceptible strains of *N. gonorrhoeae*.

Contraindications: Contraindicated in patients previously found hypersensitive to Trobicin. Not indicated for the treatment of syphilis.

Warnings: Antibiotics used to treat gonorrhea may mask or delay the symptoms of incubating syphilis. Patients should be carefully examined and monthly serological follow-up for at least 3 months should be instituted if the diagnosis of syphilis is suspected.

Safety for use in infants, children and pregnant women has not been established.

Precautions: The usual precautions should be observed with atopic individuals. Clinical effectiveness should be monitored to detect evidence of development of resistance of *N. gonorrhoeae*.

Adverse reactions: The following reactions were observed during the single-dose clinical trials: soreness at the injection site, urticaria, dizziness, nausea, chills, fever and insomnia.

During multiple-dose subchronic tolerance studies in normal human volunteers, the following were noted: a decrease in hemoglobin, hematocrit and creatinine clearance; elevation of alkaline phosphatase, BUN and SGPT. In single and multiple-dose studies in normal volunteers, a reduction in urine output was noted. Extensive renal function studies demonstrated no consistent changes indicative of renal toxicity.

Dosage and administration: Keep at 25°C and use within 24 hours after reconstitution with diluent.

Male—single 2 gram dose (5 ml) intramuscularly. Patients with gonorrheal proctitis and patients being re-treated after failure of previous antibiotic therapy should receive 4 grams (10 ml). In geographic areas where antibiotic re-

sistance is known to be prevalent, initial treatment with 4 grams (10 ml) intramuscularly is preferred.

Female—single 4 gram dose (10 ml) intramuscularly.

How supplied: Vials, 2 and 4 grams — with ampoule of Bacteriostatic Water for Injection with Benzyl Alcohol 0.9% w/v. Reconstitution yields 5 and 10 ml respectively with a concentration of spectinomycin dihydrochloride pentahydrate equivalent to 400 mg spectinomycin per ml. For intramuscular use only.

Susceptibility Powder—for testing *in vitro* susceptibility of *N. gonorrhoeae*.

Human pharmacology: Rapidly absorbed after intramuscular injection. A two-gram injection produces peak serum concentrations averaging about 100 mcg/ml at one hour with 15 mcg/ml at 8 hours. A four-gram injection produces peak serum concentrations averaging 160 mcg/ml at two hours with 31 mcg/ml at 8 hours.

For additional product information, see your Upjohn representative or consult the package insert.

MED-B-1-S (LWB)

Upjohn

The Upjohn Company, Kalamazoo, Michigan 49001

by the Commissioner, and that it was not clear whether the appointment of a new MAC would continue the "partnership" between the Society and the Welfare Department that has prevailed in the past, the Council further VOTED to advise the Commissioner that the physicians named in the list he submitted were all qualified and of excellent reputation and to request clarification of the questions just noted.

Resolutions for Transmittal to AMA

It was VOTED to adopt three resolutions for transmittal to the AMA House of Delegates which will meet in New Orleans, 11/28-12/1/71. The subjects of the resolutions were:

- (1) *The Private Practice of Medicine:* The thrust of the resolution is to reaffirm that individual private practice has demonstrated its ability to provide quality care at reasonable cost, and to urge that it be retained as an integral part of the American health system.
- (2) *Rising Hospital Costs:* The resolution again draws attention to the activities of tax funded agencies to promote fulltime, salaried chiefs of services in hospitals, and asks for a study to be made of the effects of such activities on charges made to patients.
- (3) *Financing of Education as a Hospital Function:* The resolution is directed to the broad question of including the costs of education as a function of hospitals in the charges made to patients for hospital care, and urges that a study be made to determine how such costs could be borne equitably by the public-at-large.

Communications, Board of Directors of HCMA

It was VOTED to receive for filing copies of two letters from the HCMA Executive Director, addressed to Carl W. Johnson, HCMA Councilor, which advised Dr. Johnson of some of the activities of the newly-formed Hartford County Health Care Plan (sponsored by HCMA) and suggested that, on behalf of the Board of Directors of HCMA, Dr. Johnson propose to the Council that a CSMS grant in the amount of \$5,000 (minimum) be made in support of the HCHCP (Foundation) and to help defray some of the substantial costs that are being encountered by the Foundation in organizing and preparing to become operative. After being advised that no funds were available in 1971 or 1972 from which to make such a grant out of income, the Council VOTED to recommend to the House of Delegates on 11/17/71 that an interest-free loan of \$5,000, out of the Society's reserve funds, be offered

to the Hartford County Health Care Plan, on a payback when feasible basis, at such time as the HCHCP informs the Council that at least 51% of the members of the Hartford County Medical Association who are engaged in private practice have signed to participate in the Foundation.

Communication—SAMA

It was VOTED to receive for filing a communication from the Student American Medical Association which sought CSMS support and cooperation in implementing the SAMA "MECO" project in Connecticut. In brief, MECO undertakes to place medical students in teaching settings (hospitals, group practice clinics, etc.) during summer vacation periods and thereby make them more knowledgeable about "community educational experiences" as a help to making later decisions about their eventual types of practice and geographic location. It was further VOTED to refer this request to the Committee on Cooperation with the Medical Schools of Connecticut for study and report as to how the Society could most effectively participate in MECO's implementation in this state.

N.B.: *The foregoing is a summary of the proceedings and action of the Council on October 20, 1971. Detailed minutes of the meeting are on file at 160 St. Ronan Street, New Haven, for perusal by an interested member of the Society.*

Placement Wanted

Allergy—51 years of age, Certified, wishes solo, group, associate and industrial type practice in a medium or small size community in Connecticut. Would consider doing some general medicine with emphasis on Allergy. Connecticut license. Available immediately.

Emergency Room—28 years of age. National Boards. Wishes solo or group type practice in a medium size community in Connecticut. Would consider general practice along with a small group of other doctors. Available immediately. Contact: Robert W. Lisle, M.D., 4235 Falcon Courts North, McGuire AFB, New Jersey 08641.

General Practice—36 years of age, wishes group, associate, solo, industrial and institutional (in that order) practice in a medium, large or small size community in Connecticut. Would consider doing minor surgery according to training. Available immediately. Contact: SchueYuan Liao, M.D., 507 Hawkeye Court, Iowa City, Iowa 52240.

General Practice—24 years of age. Wishes solo type practice in a small size community in Connecticut. Available early in 1972. Contact: Michael F. O'Connor, M.D., 15520 Windmill Pointe Drive, Grosse Pointe Park, Michigan 48230.

Institutional or Industrial Medicine: Solo, family practitioner in larger Connecticut community wishes to shift to institu-

tional or industrial medicine. Board eligible. 63 years of age. Available early 1972.

Internal Medicine—34 years of age, Eligible with National Boards, wishes solo or associate type practice in Connecticut, in a medium size community. Connecticut license. Available immediately.

Internal Medicine—31 years of age, Certified, wishes group type practice in a medium size community in Connecticut. Available immediately.

Internal Medicine—62 years of age. Wishes solo or institutional type practice in Connecticut. Board Certified. Available December, 1971.

Internal Medicine-Cardiology—34 years of age, Eligible, wishes institutional type practice in a medium size community in Connecticut. Available immediately. Contact: Abnash C. Jain, M.D., 1926 W. Harrison, Apt. #1002, Chicago, Illinois 60612.

Internal Medicine—32 years of age, Certified with National Boards, wishes group or associate type practice in a medium size community in Connecticut. Connecticut license. Available immediately. Contact: J. Peter Lawler, M.D., Box 192, Naval Hospital, Portsmouth, Virginia 23708.

Neurology—41 years of age, wishes solo, group, or associate type practice in a medium or small community in Connecticut. Available immediately. Contact: George J. Vakkur, M.D., 2375 Terwood Drive, Huntingdon Valley, Pennsylvania 19006.

Obstetrics and Gynecology—36 years of age, Eligible, wishes solo, group or institutional type practice in a medium size community in Connecticut. Presently in practice. Connecticut license. Available immediately.

Orthopedics—36 years of age, Eligible with National Boards, wishes associate or institutional type practice in a medium size community in Connecticut. Also interested in academic position with special interest in Biomechanics. Available immediately.

Orthopedics—31 years of age, Eligible, wishes associate type practice in a large or medium size community in Southern Connecticut. Available immediately. Contact: Jeffrey S. Malka, M.D., 3225B Johnson Avenue, Riverdale, New York 10463.

Otolaryngology—32 years of age, Eligible with National Boards, wishes group or associate type practice in a medium size community in Connecticut. Major interests are in: Facial Plastic Otolaryngology but can and will do all aspects of the specialty. Available immediately. Contact: Alvin D. Oscar, M.D., 4419 Royal Oak Court, Columbus, Georgia 31907.

Pathology—33 years of age. Connecticut license. Board Certified. National Boards. Presently in practice. Wishes group or associate type practice. Available immediately.

Pediatrics—29 years of age, Eligible with National Boards, wishes group or associate type practice in a large or medium size community in Connecticut. Available immediately. Contact: Jerald L. Zarin, M.D., 3D Collins Street, Westover AFB, Massachusetts 01022.

Psychiatry—33 years of age, Certified with National Boards, wishes to locate in Connecticut. Presently in practice. Applied for Connecticut license. Available immediately. Contact: Charles F. Rich, Jr., M.D., Box 146, USAF Hospital, Chanute Air Force Base, Illinois 61866.

General Surgery—37 years of age, Eligible, wishes solo or associate type practice in a medium size community in Connecticut. Available immediately. Contact: Robert J. Andrews, M.D., 2 Mechanic Street, Marblehead, Massachusetts 01945.

Surgery—48 years of age, presently in practice, wishes solo or associate type practice in a medium size community in Connecticut. Available immediately. Contact: James A. Cline, M.D., 2917 Tomahawk Drive, Rapid City, South Dakota 57701.

General Surgery—32 years of age. Eligible with Connecticut license. Wishes group, associate or institutional type practice in Connecticut. Available immediately.

Surgery—39 years of age, Certified (General Surgery) Eligible (Thoracic Surgery), wishes solo, group, associate or institutional type practice in a large or medium size community in Connecticut. Presently in practice. Connecticut license. Available immediately.

General Surgery—41 years of age. Certified. Presently in practice. Wishes group or associate type practice in a medium or small size community in Connecticut. Available in January 1972. Please contact: Jose Peralta, M.D., 1916 Grand Concourse, Bronx, New York 10457.

Surgery—35 years of age, wishes group or associate type practice in a large or medium size community in Connecticut. Available immediately. Contact: Pramod Shinghal, M.D., 115 Town Square Drive, Newport News, Virginia 23607.

Urology—36 years of age, Eligible, wishes group, associate or institutional type practice in Connecticut. Available immediately.

Placement Opportunities

Allergist: Wanted immediately to take over active practice and office; medium size (70,000) Connecticut community. New Haven area. Annual gross \$58,000. Sole allergy practice in area. Call (203) 735-9501.

Physician for Emergency Room Duty—Splendid opportunity for qualified physician to work with medical group to provide around-the-clock coverage in Emergency Department for accredited General Hospital of 325 beds and modern supporting services. New England university town, two hour drive to New York and Boston. Hospital serves population of 125,000. Educational affiliation with university medical school. Liberal contract. Send curriculum vitae to Connecticut State Medical Society Placement Service, 160 St. Ronan Street, New Haven, Connecticut 06511.

Associate in General Practice: Busy general practice in Milford, Connecticut including pediatrics, Obstetrics and Gynecology, and some surgery (major and minor). New fully equipped office across the street from 200 bed open staff hospital. Boating, fishing and beaches 5 minutes from office. Yale-New Haven Medical Center and Yale cultural facilities 15 minutes away. Salary for one year with partnership to follow if agreeable. Please contact: Barry M. Winters, M.D., 73 Golden Hill Street, Milford, Connecticut 06460.

General Practice—Excellent location for general practice. Servicing 12 to 15 thousand people. Rural setting between Fairfield County, New Haven and New York. 10 miles from Norwalk and Danbury Hospitals.

General Practice—Two-man partnership in General Practice in 19,000 population community needs third man. Excellent opportunity at this time. Two other doctors in town retiring. Contact: Cheshire Medical Group, Cheshire, Connecticut.

General Practitioner Preferred—Will involve travel to medical facilities and review patient care standards. Travel to 30% nationally in one-two week spans. Salary to \$30,000. Fee Paid. Contact: F-O-R-T-U-N-E Personnel, 60 Washington Street, Hartford, 547-0900.

Orthopedic Surgeon for Affiliation—in well established private practice in Connecticut. Arrangements open to discussion.

Director of Mental Health Training in a 1500 bed psychiatric hospital: dynamically oriented-unit system; progressive team approach; association with Yale University Departments of Psychiatry and Neurology. Directs the Psychiatric Residency training program, providing intensive training and experience with individual supervision in all psychiatric modalities; arranges visiting lectures and seminars. Opportunities to develop new programs for training and education in multidisciplinary areas. Board certification in psychiatry; eligibility for state licensure; administrative ability and teaching experience necessary. Salary commensurate with experience and training, liberal benefits, including free hospitalization. Please send resume and particulars to Mehadin K. Arafeh, M.D., Superintendent, Connecticut Valley Hospital, Box 351, Middletown, Connecticut, 06457.

ANYONE INTERESTED IN THE ABOVE IS ASKED TO CONTACT THE PHYSICIANS PLACEMENT SERVICE, 160 ST. RONAN STREET, NEW HAVEN, CONNECTICUT 06511.

PRELIMINARY ANNOUNCEMENT

180TH ANNUAL MEETING

CONNECTICUT STATE

MEDICAL SOCIETY

APRIL 25, 26, 27, 1972

HARTFORD HILTON HOTEL

HARTFORD

Non-Surgical Assessment Of Cardiac Function

(*Nature*, 232, 335, July 30, 1971, Side, D. and Gosling, R. G.) Cardiac catheterization to evaluate myocardial or valvular function should not be used in the seriously ill patient and is difficult in the infant. It is not justified for periodic screening examinations nor for routine monitoring at surgery.

We need a clinical method for continuous monitoring of a parameter closely related to myocardial efficiency during and immediately after surgery.

These authors have developed an ultrasonic Doppler shift esophageal probe as a non-surgical technique for estimating aortic arch blood velocity in the conscious patient. It produces a range of audio signals corresponding to the velocity in the aorta at the arch.

Turbulence caused by a stenotic aortic valve can be detected as can percentage regurgitation be estimated directly from the record. In addition, beat to beat changes in the flow pattern and peak velocity and acceleration can be of considerable value to the surgeon by giving immediate warning of deteriorating cardiac efficiency.—L.H.N.

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\$1.00 extra if keyed through CONNECTICUT MEDICINE

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Picture of low back pain

Parafon Forte tablets help to relieve pain, restore mobility... stop pain-spasm feedback

Here is why. PARAFON FORTE provides:

a nonsalicylate analgesic equal to aspirin for relief of pain,^{1,2} yet unlikely to cause the gastric irritation^{2,3} or increased bleeding time⁴ associated with aspirin therapy.

and a skeletal muscle relaxant shown in extensive clinical studies to be useful in a variety of low back disorders⁵⁻⁷...but which is not an antihistamine or tranquilizer derivative and is unlikely to produce a tranquilizing or sedative effect.⁸

Prescribe PARAFON FORTE for effective spasmolysis and analgesia in acute sprains, strains and myalgias of the lower back, including acute exacerbations of chronic conditions. Your patients will appreciate the restored comfort and freedom of movement it usually provides.

McNEIL

McNEIL LABORATORIES, INC., FT. WASHINGTON, PA. 19034



treated with Parafon Forte® TABLETS

Paraflex® (chlorzoxazone)* 250 mg.

Tylenol® (acetaminophen) 300 mg.

Contraindications: Sensitivity to either component. **Warnings:** *Usage in Pregnancy*—Use in woman of child-bearing potential only when potential benefits outweigh possible risks. **Precautions:** Exercise caution in patients with known allergies or history of drug allergies. If a sensitivity reaction or signs or symptoms suggestive of liver dysfunction are observed, the drug should be stopped. **Adverse Reactions:** Occasionally, drowsiness, dizziness, lightheadedness, malaise, overstimulation or gastrointestinal disturbances may be noted; rarely, allergic-type skin rashes, petechiae, ecchymoses, angioneurotic edema or anaphylactic reactions. In rare instances, *Paraflex* (chlorzoxazone) may possibly have been associated with gastrointestinal bleeding. While *Paraflex* (chlorzoxazone) and chlorzoxazone-containing products have been suspected as being the cause of hepatic toxicity in approximately eighteen patients, it was not possible to state that the dysfunction was or was not drug induced. **Usual Adult Dosage:** Two tablets q.i.d. **Supplied:** Scored, light green tablets, imprinted "McNEIL"—bottles of 100.

References: 1. Batterman, R. C., and Grossman, A. J.: *Fed. Proc.* 14:316, 1955. 2. Goodman, L. S., and Gilman, A., ed.: *The Pharmacological Basis of Therapeutics*, ed. 4, New York, The Macmillan Company, 1970. 3. Vickers, F. N.: *Gastroint. Endosc.* 14:94, 1967. 4. Mielke, C. H., Jr., and Britten, A. F. H.: *New Engl. J. Med.* 282:1270, 1970 (Corresp.). 5. Kestler, O. C., and Gyurik, J.: *Industr. Med. Surg.* 21:372, 1962. 6. Forster, S., et al.: *Amer. J. Orthop.* 2:285, 1960. 7. Data on file, McNeil Laboratories, Inc. 8. Friend, D. G.: *Clin. Pharmacol. Ther.* 5:871, 1964.

*U.S. PATENT NO. 2,895,877

Electrocardiogram of the Month:

Intermittent and Rate-Dependent WPW Patterns

Yale-New Haven Hospital
New Haven, Connecticut

Prepared by
HYMAN M. CHERNOFF, M.D.
Associate Professor of Clinical Medicine,
Yale School of Medicine
Director, Dept. of Electrocardiography
Memorial Unit, Yale-New Haven Hospital

In its classical form the Wolf-Parkinson-White (WPW) electrocardiographic pattern consists of a short PR interval and a wide QRS complex, the initial portion of which is slurred (the delta-wave). Various mechanisms have been considered as a cause of these findings. The most widely accepted theory supported by data obtained from study of His bundle potentials and epicardial mapping is that accessory pathways exist between the atria and ventricles or between the AV node and the ventricles which permit the atrial excitation wave to more rapidly reach and depolarize a small portion of the ventricle. The rest of the ventricular musculature is depolarized by the atrial impulse conducted in a normal manner through the AV node and His Bundle system. In leads in which the delta-wave is of negative polarity it resembles and is often mistaken for the abnormal Q-wave of myocardial infarction. As a consequence of the altered sequence of depolarization there is altered sequence of re-

polarization. This accounts for the commonly observed ST-T changes which should not be mistaken as evidence of primary cardiac disease.

When the WPW pattern is present it usually is not possible to distinguish between the presence or absence of primary cardiac pathology. In many subjects, however, the pre-excitation of the ventricles via the accessory pathway is an unstable phenomenon which may be spontaneously intermittent or rate-dependent, or may temporarily disappear following deep breathing or the administration of various drugs such as atrophine, propranolol or quinidine. Following normalization of conduction of the atrial impulse to the ventricles, the QRST patterns can be studied for evidence of primary cardiac pathology.

Below is an example of a rate-dependent WPW pattern and also an example of the WPW pattern masking the presence of an underlying infarct pattern.

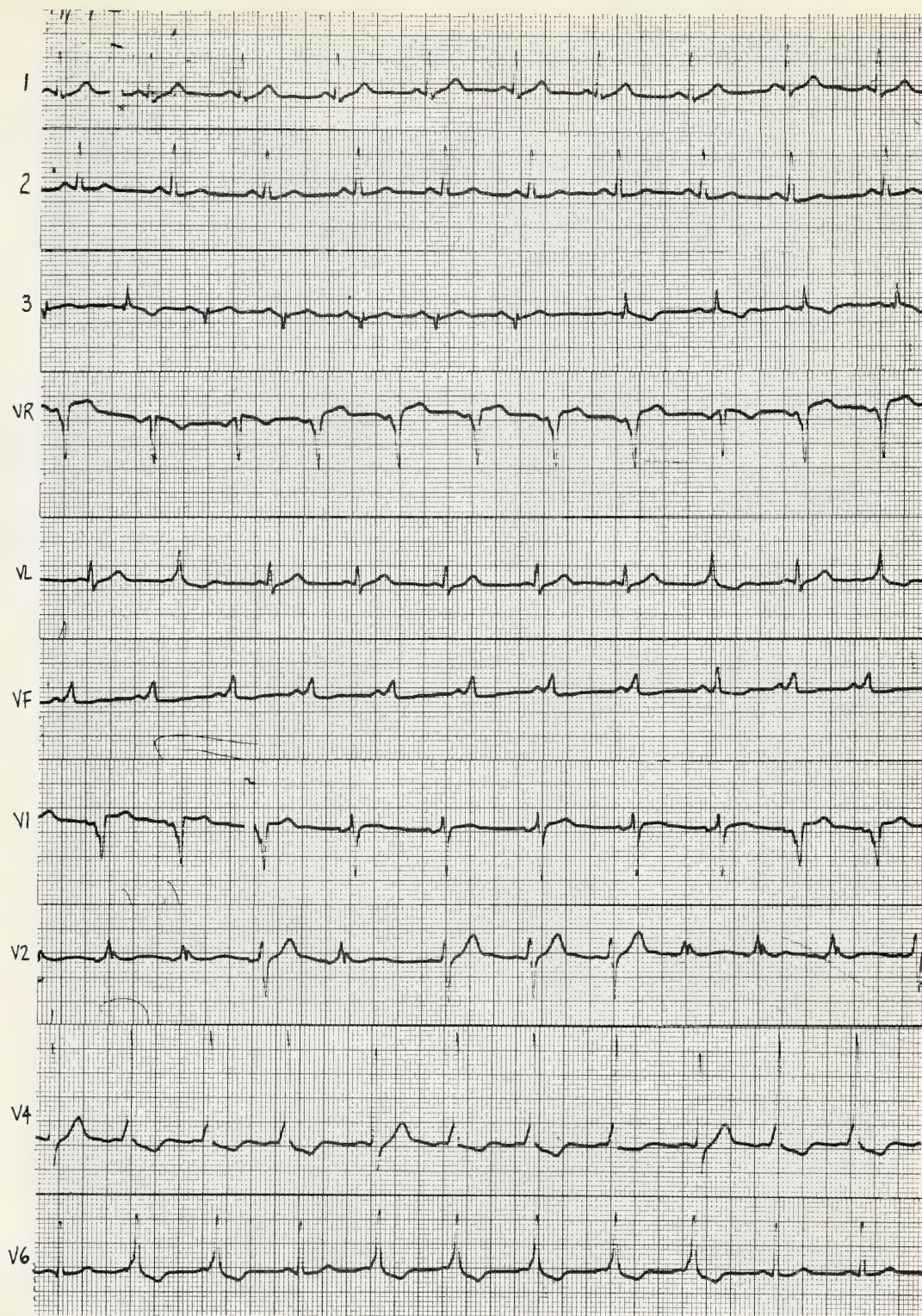


Figure 1

Intermittent WPW. Patient, female, age 31. No clinical evidence of cardiac disease. Sinus arrhythmia is present. The P-P intervals vary from 16.0 to 19.5 mm. in length (sinus rate of 77 to 94, per minute). Whenever the P-P intervals exceed 17 mm. (sinus rate 88 or less) the PR interval measures 0.12-0.13 sec., the QRS measures 0.08 sec., and the QRST patterns are normal. Whenever P-P intervals are less than 17 mm. in length (sinus rate of 88 or more) WPW patterns appear. The PR interval shortens to 0.08 to 0.10 sec., the QRS interval lengthens to 0.11-0.12 sec. Negative delta-waves appear in leads aVR and V1, positive delta-waves appear in leads aVL, aVF, V2, V4, and V6, and the ST-T segments deviate in a direction opposite to that of the delta-waves.

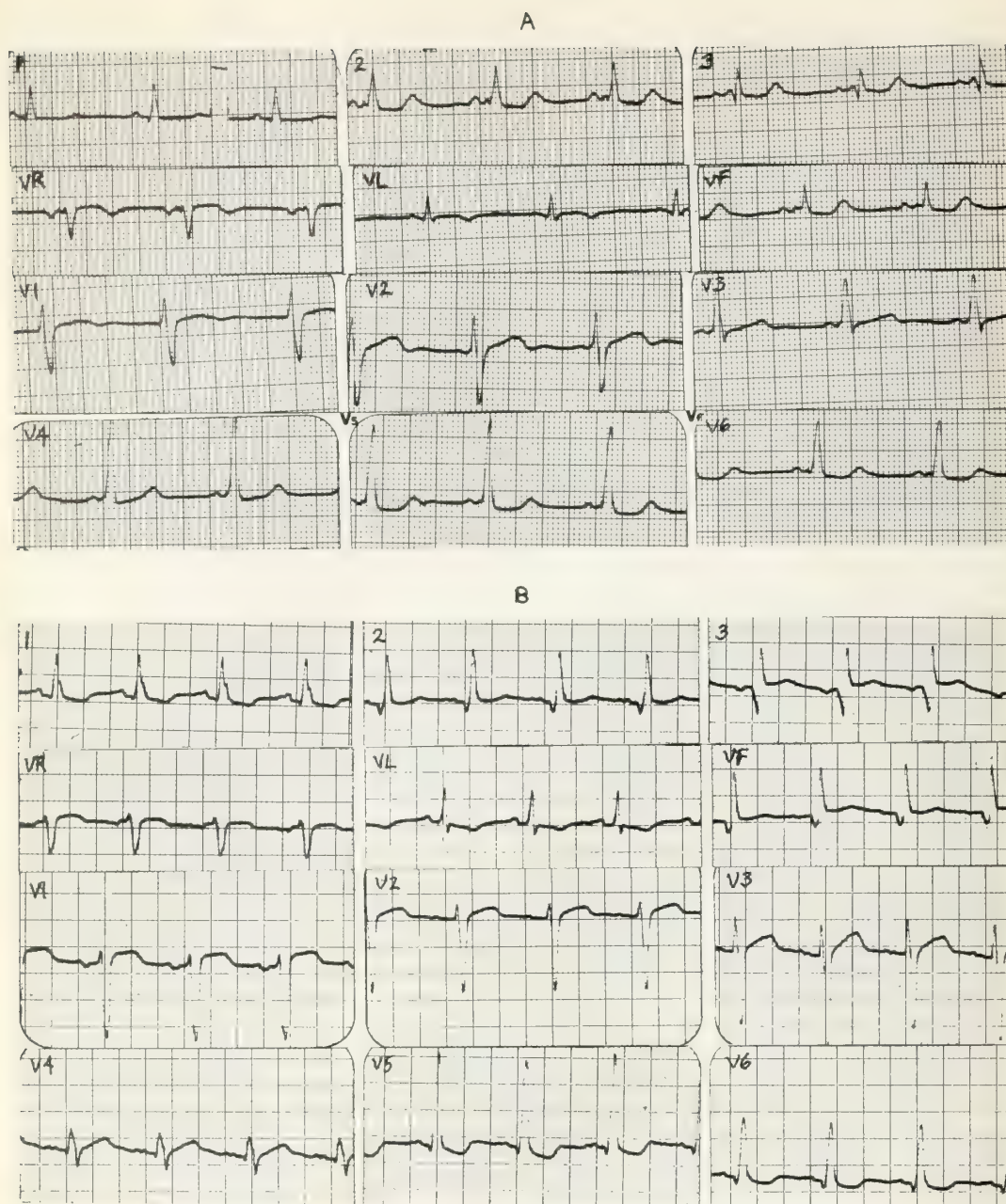


Figure 2

WPW patterns masking inferior infarct. Patient male, age 60. History of inferior wall infarction in May 1969. Tracing A, taken on 5-15-70. Rhythm is sinus with sinus rate of approximately 65 per minute. PR interval measures 0.10 to 0.12 sec. QRS interval measures 0.12 sec. Small positive delta-waves are present in leads 2,3,aVF, V1-V6. Small negative delta-waves are present in leads 1,aVR, and aVL. The ST segments are slightly depressed in leads 2,3,aVF, V4-V6. These findings are consistent with the WPW phenomenon. The patterns of the previous inferior wall infarction are masked.

Tracing B, taken on 8-15-70. Rhythm is sinus with sinus rate of 90-94 per minute. PR interval measures 0.16 sec. QRS interval measures 0.10 sec. The delta-waves have disappeared. Abnormal Q-waves are now noted in leads 2,3, and aVF, consistent with inferior wall infarction. The P-waves are now bifid or biphasic in most leads, suggesting left atrial dilation.



Medical Seminars at Sea

Seminars will be held aboard the MTS Jason departing San Juan, Puerto Rico Saturday, January 29, and February 12, 1972. Selected and exclusive ports of call include Guadeloupe, Grenada, and Dominica.

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Associate Professor of
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University of Pennsylvania
School of Medicine.
Frank A. Oski, M.D.
Associate Professor of Pediatrics,
University of Pennsylvania
School of Medicine.

SUBJECT— Current Concepts of Conception,
Pregnancy and the Neonatal Period.

SEMINAR — FEBRUARY 12 - FEBRUARY 26, 1972

SPEAKERS— Elliot L. Sagall, M.D., Clinical In-
structor in Medicine, Harvard Law
School, Lecturer on Law and Legal
Medicine, Boston University School
of Law, Instructor in Legal Medicine
Boston College Law School.
Barry C. Reed, LL.B., Trial
Attorney, Massachusetts State Bar.

CO-AUTHORS OF:

The Heart and the Law, New York:
Macmillan, 1965.

The Law and Clinical Medicine,
Philadelphia, Pennsylvania: J.D.
Lippincott, 1970.

SUBJECT— The Law and Clinical Medicine.



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Letters To The Editor

Members of the Society are invited to communicate with the Editor of CONNECTICUT MEDICINE expressing their opinions or giving information as to any matter of interest to the members. The Editorial Board reserves to itself the right to select the communications or excerpts therefrom that will be published and to reject others. As with other material which is submitted for publication, all correspondence will be subject to the usual editing and possible abridgment. Material should be typewritten double spaced, and be of reasonable length (not over 1½-2 pages). Address all correspondence to: THE EDITOR, CONNECTICUT MEDICINE, 160 St. Ronan Street, New Haven, Connecticut 06511.

To the Editor:

As suggested in my letter of July 22, 1971, this is my follow up report on the fate of the legislation discussed in my article entitled "Lead and the Legislature—1971" printed in the August 1971 issue of Connecticut Medicine.

The legislative package of the Governor's Lead Task Force fared well, indeed, in the 1971 General Assembly. The most important bill (H.B. 5178) requiring doctors, hospitals and laboratories to report cases of lead poisoning to the State Commissioner of Health was enacted as Public Act 22, effective October 1, 1971. I commend the provisions of this legislation to the attention of your readers.

Almost as important, our request for a special appropriation to the State Health Department for increased staff and laboratory facilities for performing screening and diagnostic tests and studying new methods of lead level detection survived the fiscal crunch. Special Act 150, effective July 1, 1971, appropriated \$25,000 this fiscal year. I hope Governor Meskill permits the funds to be expended.

H.B. 5108 seeking to permit municipalities to adopt local Certificates of Occupancy Ordinances was enacted as Public Act 570, effective October 1, 1971, but it was amended to apply only to those municipalities which adopt it, and only to houses with four or more apartments, more than fifteen years old.

Another bill amended various existing statutes, such as the Tenement House Act, the Tenants Representatives Law and the Covenant of Habitability Act to recognize the dangers of toxic lead paint. This law, Public Act 194, was effective May 21,

1971, and was, in fact, stronger as passed than as introduced.

Public Act 35, effective October 1, 1971, put back stiff fines (up to \$500.00) for violations of the Lead Paint Laws, correcting the 1969 legislative setback alluded to in my August article.

Finally, a Hazardous Substances and Child Protection Act becomes effective on April 1, 1972, as Public Act 121, placing under the control of the State Commissioner of Consumer Protection a great variety of dangerous toys and household materials in addition to lead base paints.

The proposals for the Citizens' Advisory Commission, for a \$250,000 per year grant program to municipalities, and for Housing Divisions in the Circuit Court died aborning. But six bills out of nine is an excellent average in a legislative session obsessed with tax, budgetary and fiscal questions and increasingly unsympathetic to needs of the kinds of poor families most often faced with leaded environments.

The assistance of doctors and health service professionals on the Governor's Lead Task Force and during the session was very helpful. I am grateful for their time and assistance. I invite continued assistance and cooperation from the medical and health service professions in the February 1972 session of the Connecticut General Assembly.

Very truly yours,

Robert G. Oliver
State Representative

New Haven, Conn.

To the Editor:

In *Connecticut Medicine* July 1971, Vol. 35, No. 7 on page 457 the recommendation of the Committee on Rehabilitation concerning the appointment of health services coordinators within general hospitals was noted with considerable interest. That recommendation suggested that the Medical Society recommend to the Regional Medical Program the funding of health service coordinators in general hospitals.

The Connecticut State Department of Health because of its work with community agencies which provide the post hospitalization services became aware of this need and of the problems created when it was not met several years ago. Provision of

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the service on a pilot basis was begun in 1969. Two Connecticut hospitals are using public health nurses as part time coordinators of services following the procedure suggested in the resolution published in *Connecticut Medicine*.

In the March 1971 Connecticut Health Bulletin on page 95 a summary of the health department's program was presented. A copy of this article is enclosed for your information. The Connecticut Health Bulletin is mailed to all physicians. However, I am sure that not every article is read.

I am wondering about the possibility of coordinating these two separate items—the report of the Committee on Rehabilitation as published in *Connecticut Medicine* and the report on discharge planning as published in the monthly health bulletin. Perhaps this letter could be referred to the Committee on Rehabilitation to indicate that someone is already undertaking this program. Or perhaps an editorial or a summary statement might be published as followup in *Connecticut Medicine*. I would appreciate your reaction to these suggestions and any thoughts you might have on the furtherance of what I believe has already proved itself to be an excellent program, particularly in the medium-sized and smaller hospitals in the state.

Sincerely yours,
Harold S. Barrett, M.D.
Deputy Commissioner

State Department of Health
Hartford, Conn.

Dr. Thomas F. Hines replies:

I have received your letter of October 12th along with a copy of Dr. Barrett's letter to you.

I would like you to know that at the time the Committee on Rehabilitation met and considered its recommendation to the Medical Society that we were aware of the fact that the Department of Health had initiated a pilot program in 1969. We were also aware that, as Dr. Barrett noted, two Connecticut hospitals were using public health nurses as part-time coordinators of services.

We felt the program so worthwhile that it should be extended to all acute hospitals. This should markedly help with appropriate bed utilization as well as directing patients to necessary appropriate services in other hospitals or in community health agencies and out-patient treatment facilities affording good continuing care. I am informed that 20 of the 35 acute hospitals do have part-time or full-time health services coordinators. Of these 20, 8 have

home care programs set up according to Blue Cross criteria and in addition, a Westerly, Rhode Island Hospital has a contract with Blue Cross for services to Connecticut patients.

Our recommendation, hopefully, would allow the other hospitals financial assistance at least for an initial period of time to obtain these necessary services.

This, then, was an effort to supplement the fine program originally started by the State Department of Health. Several of us, at least, were aware of the Connecticut Health Bulletin of March, 1971 in which a summary of the Health Department's program was presented.

I think the second matter is that if the Department of Health has more finances and could accomplish the above goals, this might be further publicized at the hospitals which currently do not have health services coordinators.

I am sorry if this recommendation from the Committee on Rehabilitation gave the impression that we had originated this concept which indeed we did not. We were, however, aware of it and I am sorry that information about the Connecticut Department of Health's program did not appear in the recommendation.

Thank you for writing me and if there is any further information I can send on to you, please do not hesitate to call me.

With kindest personal regards,
Thomas F. Hines, M.D.

Medical Director,
The Gaylord Hospital,
Wallingford, Conn.
Chief Executive Officer
Chairman, Committee on Rehabilitation
Connecticut State Medical Society

To the Editor:

During our recent conversation about early research experiences, you mentioned that it would be of interest for me to send a memorandum about Professor Mendel when I first met him in his office at Yale in the spring of 1926.

My appointment was to talk about a research proposal to study the identity of human milk "casein" compound with the analogous protein in cow's milk. Seated beside Professor Osborne, they were jointly dictating to his secretary a paper for the Journal. He greeted me cordially, introduced me to Professor Osborne, and asked me to be seated for a few minutes while they finished the manu-

script. Each in turn deferred to the other in dictating specific sections, paragraph by paragraph while keeping alert to the other's occasional comments or questions.

Within a short time the manuscript was finished, and then both talked freely about the limited information concerning the amino acids in milk proteins, including emphasis on the fact that there were serious discrepancies in their data for total sulfur compared with the apparent cystine content. They speculated on the probable existence of another sulfur-containing amino acid—an obvious forecast of methionine.

To me it was a thrilling experience to see the very efficient but very skillful, sensitive manner in which both men worked together on a manuscript for the *Journal of Biological Chemistry*. When Professor Osborne rose to return to his office, he commented in good humor, "I'm not much of a scientist anymore—I'm getting to be more of a banker."

Sincerely,

C. G. King, *Past President*

International Union Of Nutritional Sciences
Columbia University, New York, New York

Mono-amine Metabolites In Cerebrospinal Fluid During Methadone Maintenance

(*Nature*, 232, 581, August 20, 1971, Bowers, M. B., Kleber, H. D. and Davis, L.) Functional mono-amine systems are necessary for both the acute and long term effects of the narcotic analgesics. Mono-amine oxidase inhibitors increase the toxicity of narcotic analgesics probably by increasing levels of serotonin. Inhibitors of serotonin and catechol-amine synthesis increase sensitivity to pain and antagonize acute and long term narcotic effects.

These studies suggest that mono-amines are utilized in the production of acute and long term narcotic effects. On maintenance doses of methadone in man, serotonin and probably dopamine synthesis were decreased.—L.H.N.

Transitive Inferences And Memory In Young Children

(*Nature*, 232, 456, August 13, 1971, Bryant, P. E. and Trabasso, T.) Piaget believed that young children 4-6 years of age could not make transitive inferences. However, he did not take memory deficits into account.

These authors performed experiments upon 60

young children 4-6 years of age. There seemed to be no differences in speed of learning. However, the four year olds made more errors than the 5 and 6 but these errors were caused by memory deficits. When this was corrected, all could infer from the sequence $A > B > C$ that $A > C$.

Young children then can make transitive inferences extremely effectively. They can combine separate quantity judgments very well and they do so at a far younger age than has been generally assumed.

This is an important conclusion which has practical as well as theoretical importance.—L.H.N.

Rhythmic Habit Patterns In Normal Infants

(*JAMA*, 217: 1320, September 6, 1971) Harvey Kravitz has just completed a 12 year study of rhythmic habit patterns of newborn children. Newborn children usually begin to suck their hands in the first few hours of life. As they grow older they pick up more rhythmic habit patterns.

These new habit patterns means the baby is "learning new skills, discovering new parts of his body—it's a sign his nervous system is developing normally."

His message to mother is let the baby kick, rock, bang his little head or whatever rhythmic activity seems to appeal to him. First of all he's just enjoying himself. Besides, its a reassuring sign his nervous system is developing normally.—L.H.N.

Roentgenography Guidelines

(*JAMA*, 217: 1320, September 6, 1971) A new booklet gives roentgenography guidelines which if followed will significantly reduce the genetically significant dose of radiation from diagnostic roentgenography.

In some instances "as much as two-thirds of the present exposure may not contribute to diagnostic information and therefore may be unnecessary." Recent surveys have shown that about 60 percent of all diagnostic radiologic studies are supervised by radiologists, the booklet says. Failure to restrict the x-ray beam to the size of the film or fluoroscopic screen, the booklet points out, is the major identifiable cause of unnecessary exposure.—L.H.N.

Copies of the booklet are available from the Bureau of Radiological Health, 1901 Chapman Ave., Rockville, Md. 20852.

A New Film

Geriatric Pharmaceutical Corporation has made available prints of a 16 minute, 16 millimeter, color and sound film entitled "Decision". The film was prepared in cooperation with the Self Employment Group of APTA and selected pharmaceutical manufacturers, and was filmed at the University of California Department of Physical Medicine and Rehabilitation.

The film is tailored to students at the high school or early college level, and portrays the background and activities of the physical therapist. It follows the activity of the therapist through his professional training and practice, in the classroom, in the hospital, in the office and in the home. The film is strictly non-commercial, no products or devices are advertised or recommended.

"Decision" is of invaluable assistance to R.P.T.'s who are called upon by civic and other groups to talk about their work, since its comprehensive explanations cover virtually every facet of the profession. It can simplify and shorten the oral explanation by the R.P.T. and has been found to generate a lively "question and answer" period after its viewing.

The film is especially valuable for administrators and educators, for viewing by students who might be interested in pursuing a career in Physical Therapy.

Arrangements for booking on loan can be made by writing to Mr. Gustave Bardfeld, Director of Clinical Research, Geriatric Pharmaceutical Corporation, 397 Jericho Turnpike, Floral Park, N.Y. 11001.

NOTICE TO CONTRIBUTORS

Members of The Connecticut State Medical Society reading papers before other organizations are requested to submit their papers to the JOURNAL for consideration by the Board of Editors for publication. Detailed instructions to contributors appear in the last section of *Connecticut Medicine*. Adherence to the instructions will prevent delays both in acceptance and in publication.

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OBITUARIES

Jacques Henry Green, M.D. 1890-1971

Jacques Henry Green, M.D. of 1559 Ridge Road, North Haven, Connecticut, retired Chief Pediatrician, Waterbury and St. Mary's Hospitals, Waterbury, Connecticut, died November 2, 1971, at the age of 81.



Doctor Green was born in New York City October 14, 1890 the son of the late Morris A. and Minnie Levin Green. After preliminary preparation in Waterbury schools and graduation from Yale University he entered Bellevue Medical College, presently known as New York University, from which school he received the degree of Doctor of Medicine in 1913.

His return to practice in Waterbury was interrupted by service in the Army Medical Corps from 1917-1919 as a First Lieutenant. The war being over, Dr. Green continued his education with special training in bacteriology at the Rockefeller Institute, organizing units for infectious disease throughout the southeastern region of the United States followed by special pediatrics training at Columbia University and St. Mary's Hospital for Children in New York City. He then returned to Waterbury to a very active career as a pediatrician.

Dr. Green not only served his community with distinction, but found time for the organizations of the Medical Fraternity as a member and President of the Waterbury Medical Association and New Haven County Medical Association. He was

a licentiate of the American Board of Pediatrics and fellow of the American Board of Pediatrics. Other societies in which he was a member were the Connecticut State Medical Society, the American Medical Association, the New England Pediatric Society. He also served as president of the St. Mary's Hospital and the Waterbury Hospital.

Dr. Green served with distinction as Chairman of the Committee on Medical Ethics and Department of the New Haven County Medical Association from 1959 through March 1970. The high standards of practice in this County and the paucity of malpractice suits brought against physicians was due in no small measure to his untiring efforts in this direction and his rapport with the Committee of the New Haven and Connecticut State Bar Associations.

Dr. Green served in several other organizations including the Lodge of Masons, Eureka Chapter.

He leaves his wife Minna Oser Green; two daughters, Mrs. Everett Fox Fink of West Hartford and Mrs. Martin Hyman of New York City.

Hyman A. Levin, M.D.

Charles William Gaylord, M.D. 1889-1971

Dr. Charles William Gaylord came to the end of his life on September 16th of this year, after a short illness.



In the years that have been granted me as a member of the medical family, it was my privilege to know his father, Dr. Charles Woolsey Gaylord, who

practiced in Branford. In his turn, I knew Charlie Gaylord as a student at the medical school and later as an interne at the Grace Hospital. In following the example of his father, Charlie Gaylord was a rare, but disappearing type of family physician. He carried on in the traditional way well, and served his community for about 50 years.

His was the approach of a dedicated family friend, and it is indeed a sorrowing community which will miss his kindness and his service to them. He served his church well. He was a veteran of World War I and held membership in the New Haven Medical Association, the New Haven County Medical Association, the Connecticut State Medical Society and the American Medical Association. He was a member of the Board of Trustees which directed the Blackstone Memorial Library in Branford. He was a member of the Branford Historical Society. His Yale affiliations were the Book and Bond, and the Yale Club in New Haven. Into all of these activities he brought his sincerity and active interest at all times.

He is survived by his wife, his daughter, Miss Nancy G. Gaylord and his brother and two sisters. This was a rare man, a citizen of his community and a source of gratitude in the large group of families who were his patients. Certainly, it must be said, that few men respond to the call as conscientiously as did Dr. Charles William Gaylord. May he rest in Peace.

His presence will very definitely be missed.

Maxwell Lear, M.D.

Robert Hunter Osmond, M.D. 1895-1971

Dr. Robert Hunter Osmond, a general surgeon in Hartford for 37 years, died quietly at home on October 15, 1971 of multiple myeloma. He was born in New Haven on January 25, 1895, attended West Haven public schools and was graduated from Yale University in 1917, following which he served as a second lieutenant in the Army Air Service in World War I. He received his medical degree from Yale University School of Medicine in 1923 and served an internship at Willard Parker Hospital in New York City. He established a practice in general surgery in Hartford in 1926 and retired in 1963.

In addition to being on the active staff at Hartford Hospital and a consultant at the Veterans Administration Hospital at Newington, Dr. Osmond was a member of the American Medical Association, the New England Surgical Society, the Connecticut State Medical Society, the Hartford County Medical

Society, and the Hartford Medical Society.

Dr. Osmond suffered an unusual number of adversities in his lifetime, but he maintained even to his last days a delightfully bright, quick wit which he used as a cover for his exquisite gentleness and sensitivity. He was a modest gentleman who never compromised principle for expediency. Those who knew him were privileged and will miss his warm humor and concern for others.

Besides his wife, Mrs. Bessie Morton Osmond, Dr. Osmond leaves a son, Robert III, of West Hartford, and a daughter, Mrs. Janet Keeling, of Bronxville, New York.

Chester A. Wiese, Jr., M.D.

In Memoriam

Booth, John D., Columbia College of Physicians & Surgeons, 1926. Dr. Booth was a practicing surgeon in the Fairfield area since 1929, prior to his retirement in 1970. He was medical examiner for Danbury for more than 30 years and also served many years on the Connecticut Medical Examining Board. Dr. Booth was a past president of the Fairfield County Medical Association, a past vice-president of the Connecticut State Medical Society and a member of the American Medical Association. Dr. Booth died October 3, 1971, at the age of 69.

Carniglia, Ettore F., Harvard, 1929. Dr. Carniglia was a practicing physician in the Hartford area since 1929. He served as chief of the visiting staff of Hartford Hospital and was a member of the Hartford County Medical Association, Connecticut State Medical Society, and the American Medical Association. Dr. Carniglia died October 23, 1971, at the age of 67.

Miller, James R., Johns Hopkins, 1911. Dr. Miller was a practicing gynecologist in the Hartford area since 1915 until his retirement in 1951. He was a member of the Hartford County Medical Association, a past president of the Connecticut State Medical Society and a member of the American Medical Association. Dr. Miller died October 25, 1971, at the age of 85.

Winick, Nathan M., New York University, 1943. Dr. Winick was a practicing physician and surgeon in the Hartford area since 1943. He served as surgeon on the staffs of Westfield State Sanatorium in Westfield, Mass., and Lawrence and Memorial Hos-

pital in New London. He became a member of the active staff of Mt. Sinai Hospital in 1952 and was later promoted to associate in general surgery. He was a member of the Hartford County Medical Association, the Connecticut State Medical Society and the American Medical Association. Dr. Winick died October 14, 1971, at the age of 57.

Welcome, New Members

Hartford County

Abdel F. Allam, M.D., 300 Main Street, Bristol, Conn. 06010.
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Stanley S. Weglarz, M.D., 50 Ridgefield Avenue, Bridgeport, Conn. 06610.
David M. Zolov, M.D., 59 Main Street, Danbury, Conn. 06810.
Howard E. Zusman, M.D., Norwalk Hospital, Norwalk, Conn. 06856.

Mortality Of The Aged Before And After Medicare

(*Private Practice*, 3: 54, September, 1971, Robert J. Myers) One of the arguments offered for Medicare was older citizens would receive better medical care and reduce their mortality.

A similar argument is now being advocated by proponents of national health insurance.

Professor Myers analyzed the death rate for total population aged 65 and over 1961-1970 and found no significant improvement in the mortality of the total aged population since the advent of medicare. —L.H.N.

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Golden Anniversary

The American Medical Association Woman's Auxiliary will celebrate its 50th anniversary in 1972. Our challenge during this Golden Auxiliary Year is 100,000 members. This represents an increase of over 11,000 members. Can we do it? It's an exciting challenge to get to work on now in our auxiliaries.

Some may ask, "What is the A.M.A. Woman's Auxiliary?"

The Woman's Auxiliary to the American Medical Association is a national organization of wives of members of the A.M.A. A non-profit, public service, volunteer organization, it was founded in 1922 to assist physicians in their work of protecting the public health and providing the highest type of medical care. There are 89,000 members and more than 1,100 county auxiliaries in the 50 states and the District of Columbia.

Others may ask, "What does the A.M.A. Auxiliary do?"

Advised and guided by the leaders of the medical profession, doctors' wives are engaged in a broad program of activities for the betterment of the health of the American people. Their activities include health manpower recruitment, community health services, health education, gifts to support medical education, and development of home-centered health care. Also, mental health services, training for safety, international health activities and work for good medical legislation.

10 Reasons for Joining

the A.M.A. Woman's Auxiliary

1. The A.M.A. Woman's Auxiliary is the only organization in which the doctor's wife can join forces with 89,000 other doctors' wives to assist the medical profession in its program for

the advancement of medicine and the betterment of public health.

2. Only through the auxiliary can doctors' wives work together to create a better image of American medicine and help foster favorable public sentiment.
3. Only through the auxiliary can doctors' wives work with the approval and cooperation of medical men to solve health problems in their communities.
4. The Auxiliary is a strong, purposeful, well-recognized organization through which doctors' wives can have a collective voice affecting public policies related to health.
5. Auxiliary membership declares to the public that the doctor's wife is proud to be associated with her husband's professional group and approves of its goals.
6. Auxiliary membership proclaims the pride of the doctor's wife in her husband and in all he does and stands for.
7. Auxiliary membership demonstrates to the public that the doctor's wife is anxious to serve her community.
8. Only in the medical auxiliary can the doctor's wife meet together with other women who have common interests and common problems.
9. The auxiliary is an exclusive group—only for the doctor's wife—no others can belong. This is a responsibility and a privilege.
10. Auxiliary membership demonstrates that the doctor's wife is accepted and welcomed by the medical profession as a full partner in the cause of better health for all people.

Mrs. Willard C. Scrivner, first vice president and national membership chairman says, "Membership is very much a social problem. Too often we tend

to enjoy our intimate circle of friends and ignore our new members. We must be interested in *all* members. We should innovate and seek ways to overcome complacency and indifference, remembering that auxiliary membership implies meaningful responsibility to meet current challenges, as well as providing opportunities for related social activities."

Let's get to work in Connecticut to increase and strengthen our Auxiliary! Our fair share of the National goal would be about one hundred new members.

Meeting Notices

The information on this "notices" page is offered as a service of all specialty groups and allied health agencies in order to publicize postgraduate educational opportunities available to subscribers. The deadline for publication in Connecticut Medicine is the tenth of the month preceding, date of issue. Send copy to: Connecticut State Medical Society, 160 St. Ronan Street, New Haven, Connecticut 06511.

GENERAL

April 25-27, 1972—Tuesday-Thursday
180th Annual Meeting of the Connecticut State Medical Society

Theme: Clinical Pharmacology
Hartford Hilton, Hartford
September, 1971-May, 1972

Lecture Series—Each Tuesday

Basic Sciences As Related to Clinical Medicine:
Infectious Diseases, Coronary Care Problems,
Diagnosis and Treatment of Tumors

Lawrence and Memorial Hospitals
New London, Connecticut

Contact: Edward Gipstein, M.D.

February 23-25—Wednesday-Friday

Diagnosis and Management of Infectious Diseases
University of California, Center of Health and
Science, Los Angeles

March 20-24—Monday-Friday
Specifically Treatable Diseases

University of Pennsylvania School of Medicine,
Philadelphia

GASTROENTEROLOGY

February 7-9—Monday-Wednesday

Digestion and Disorders of Digestion

Mayo Graduate School, Rochester, Minnesota

INTERNAL MEDICINE

January 26—Wednesday

CSMS Section on Internal Medicine; Connecticut Society of Internal Medicine; American College of Physicians

Hunt Memorial

Scarborough Street, Hartford

Contact: Benjamin V. White, M.D., Hartford

PSYCHIATRY

December 21—Tuesday—2:00 P.M.

Lecture series:

Further Data on Families of Schizophrenies

Theodore Lidz, M.D.

Connecticut Valley Hospital, Middletown

SURGERY

January 27—Thursday

Annual Meeting of the Connecticut Chapter of American College of Surgeons

Park Plaza, New Haven

Contact: Francis M. Hall, M.D., Hartford

February 2-5, 1972—Friday-Saturday

Symposium on Problems of the Female Breast as Related to Neoplasms and Reconstruction
Memorial Sloan-Kettering Cancer Center,
New York City

Liquid Hydrogen As A Fuel For The Future

(*Science*, 174: 367, October 22, 1971, Jones L. W.)
The price of liquid oxygen has dropped so that the cost of one liter is that of gasoline. The amount of fossil fuel (coal, oil, natural gas) is finite and will soon lead to their extinction. Their oxidation causes air pollution whereas oxidation of hydrogen will not. Therefore, if we are to seek a chemical fuel that will not pollute, hydrogen must be the chemical of choice. It burns very efficiently in a lean mixture.

It is an ideal fuel from the standpoint of a completely cyclic system serving as a "working substance" in a closed chemical and thermodynamic cycle. The energy-per-unit weight advantage (a factor of 3) over gasoline or any other hydrocarbon fuel makes hydrogen particularly advantageous for aircraft and long range land transport.

As a pollution free fuel, it must be seriously considered as the logical replacement for hydrocarbons in the 21st century.—L.H.N.

TREATMENT AND PREVENTION OF SYPHILIS AND GONORRHEA

Of the officially designated venereal diseases—syphilis, gonorrhea, chancroid, lymphogranuloma venereum, and granuloma inguinale—the most prevalent and the most injurious are syphilis and gonorrhea. Gonorrhea especially taxes the resources of the physician because of the increasing resistance of the gonococcus to penicillin G.

SYPHILIS—Serologic Diagnosis—The organism that cause syphilis, *Treponema pallidum*, evokes the production of lipid (non-treponemal) and treponemal antibodies. Tests using non-treponemal antigens (such as VDRL) are not highly specific but are easy to perform. A positive VDRL reverts to negative six to 12 months after adequate treatment of primary syphilis and 12 to 24 months after treatment of secondary syphilis. Treponemal antigen tests are specific but they are more difficult to perform; of these, the fluorescent treponemal antibody-absorption test (FTA-ABS) is more sensitive than the older *Treponema pallidum* immobilization test (TPI). The FTA-ABS remains positive for many years even after adequate treatment, and cannot be used to gauge the effectiveness of therapy.

Treatment—Parenteral penicillin G is the drug of choice for the treatment of syphilis. There is no evidence that *Treponema pallidum* is becoming resistant to the antibiotic. For primary and secondary syphilis and for latent syphilis with a negative spinal fluid, the recommended dosage is 600,000 to 1.2 million units of aqueous procaine penicillin, injected daily for 10 years. A more convenient alternative is a single injection of 2.4 million units of benzathine penicillin, a repository formulation (U.S. PHS, Publ. No. 1660, Wash., D.C., 1968), though some clinics give one or two additional injections at weekly intervals. Oral penicillin carries less risk of severe hypersensitivity reactions but it is seldom used in treating syphilis because its success depends on the reliability of the patient and completeness of absorption. If the non-treponemal serologic tests are negative, patients with primary or secondary syphilis are usually discharged after 12 months.

Retreatment is necessary for patients who show clinical or serologic relapse (two-tube increase in titer) and for sero-fast patients with persistent high titers of antibody to non-treponemal antigens six to 12 months after treatment. An examination of the cerebrospinal fluid is essential in patients with syphilis beyond the secondary stage, regardless of

the serologic titer, and in patients with primary or secondary syphilis who demonstrate persistent high titers.

For late syphilis, including neurosyphilis, cardiovascular syphilis, and late benign (gummatous) syphilis, the same dose of procain penicillin is administered, (600,000 to 1.2 million units daily), but for 15 days instead of 10. If benzathine penicillin is used, two or three doses of three million units each should be given, with a week's interval between doses.

Complete sero-reversal is not usual following treatment of late syphilis even with tests using non-treponemal antigens; tests with treponemal antigens (FTA-ABS) are likely to remain positive indefinitely. Even with sero-reversal and bacterial eradication tissue damage may progress (increased aortic valve regurgitation, increased size of aneurysm, or the development of a Charcot joint in tabes dorsalis); clinicians therefore keep patients with late syphilis under observation for complications for many years.

Syphilis in Pregnancy—Treatment for pregnant women is the same as for other patients except that follow-up serologic tests should be performed monthly until delivery. If treatment during a previous pregnancy was adequate and there has been no change in serologic titer, retreatment of the mother is not necessary.

Congenital Syphilis—Treponemal or non-treponemal antibodies in a newborn infant without any stigmata of syphilis may be due either to passive transfer of maternal antibody or to prenatal infection. Unless an FTA-ABS test that distinguishes maternal from infantile antibodies is available, Medical Letter consultants recommend prompt treatment of sero-positive infants and advise against waiting three to six months to see if the antibody titer falls. Children under two years of age with congenital syphilis can be given a total of 100,000 units of aqueous procain penicillin per kilogram of body weight divided into ten daily doses, with a maximum total dosage of three million units.

Adverse Reactions—The Jarisch-Herxheimer reaction, usually manifested as a fever a few hours after the first injection, can be managed with aspirin. However, in neurosyphilis associated with optic atrophy, paresis with convulsions, papilledema, or nerve deafness, where a small focal reaction might have serious effects, some Medical Letter consultants administer 60 mg of a corticosteroid such as prednisone before injecting penicillin to attenuate the reaction.

Alternatives to Penicillin—Most patients with primary, secondary or latent syphilis known to be or suspected of being allergic to penicillin should be treated with 500 mg or oral tetracycline four times a day for 15 days. Pregnant women should receive erythromycin (750 four times a day for 15 days) since a tetracycline may cause staining of the teeth and bone lesions in the newborn when given after the fourth month of pregnancy (Medical Letter, Vol. 13, p. 56, June 25, 1971).

GONORRHEA—Penicillin G is the drug of choice for gonorrhea as for syphilis. Owing to the decreasing sensitivity of the gonococcus to penicillin in the past decade, however, the doses have to be much larger than those previously used. A repository penicillin such as benzathine penicillin should not be used since resulting tissue levels are too low. Penicillin V and the penicillinase-resistant penicillins are also relatively ineffective in gonococcal infections. As in syphilis, penicillin G should be administered parenterally.

The dose required varies in different parts of the world, depending on the sensitivity of the organism. In some parts of Europe, single injections of 1.2 million units of aqueous procaine penicillin may still serve, but in other areas, including the United States, a single injection of 2.4 million units of procaine penicillin is generally advocated for males and 4.8 million units for females. In regions where highly resistant gonococci are often seen many physicians administer probenecid orally at the same time to increase the blood levels of penicillin G.

An alternative to penicillin G in some resistant cases is ampicillin (2 Gm intramuscularly) plus probenecid (2 Gm in 24 hours), or oral doses of tetracycline (500 mg four times a day for four days). Kanamycin can also be used (2 Gm by intramuscular injection) but it may be ototoxic in patients with decreased renal function. Strains of gonococci less sensitive to penicillin G may also be less sensitive to ampicillin and other antibiotics. For patients allergic to penicillin, a tetracycline or kanamycin can be used.

Spectinomycin (Trobicin—Upjohn), a drug just approved by the Food and Drug Administration for

use only in gonorrhea, has been reported to be effective in a high percentage of patients. It is given as a single intramuscular injection of 2 Gm for males and 4 Gm for females. Spectinomycin has been used in patients who failed to respond to penicillin or were allergic to it. (A Medical Letter appraisal of this drug is now being prepared.)

Criteria of Cure—Disappearance of discharge and symptoms are inadequate criteria of cure. In males, follow-up smears of genital and anal secretions should be made four to seven days after treatment. In females, if smears from the endocervical canal and the anus are negative, two successive negative cultures are required for confirmation of cure. Many physicians prolong post-treatment observation time to three months with a follow-up serologic test for syphilis to exclude the possibility of simultaneously acquired syphilitic infection.

(The prevention and treatment of gonococcal ophthalmia neonatorum was reviewed in The Medical Letter, Vol. 12, p. 38, 1970. Gonococcal arthritis will be discussed in a future issue.)

PREVENTION OF VENERAL DISEASE—The condom is an effective mechanical barrier to infection. For the male, urination immediately following intercourse and washing the genitalia and adjacent areas with soap and water affords some protection against gonorrhea and syphilis. The World Health Organization is assessing the value of antibiotic creams and foams in the prophylaxis of venereal disease in women in Eastern Asia. Some clinics recommend penicillin G in a dose of one million units immediately before or after exposure to reduce the risk of infection. In addition to treatment of the patient, the physician should assist the local health department in determining the source of the infection and in arranging for the examination and treatment of sexual contacts.

CONCLUSION—Penicillin G is the drug of choice for all stages of syphilis and for gonococcal infections. Alternative drugs for patients allergic to penicillin are oral tetracycline for syphilis (except in pregnant women, for whom oral erythromycin is preferred) and oral tetracycline or parenteral kanamycin for gonorrhea.

Reprinted from The Medical Letter on Drugs and Therapeutics, New York, N.Y., Vol. 13, No. 21, October 15, 1971.

Science News

Living Longer

(*Science*, 233: 162, September 26, 1971.) An international forum on the control of human aging was held September 2-4 in Switzerland. Two different points of view became apparent. Some held that research in life prolongation must continue and some were appalled by the social and economic aftermath of such added years.

Calorie restriction remains the simplest method of prolonging life. One suggestion was that if the human thermostat could be programmed to 2° C. less, life would be increased by 25 percent. Orgel's theory of the inaccuracy of the protein synthesizing machinery of cells was supported by a report on a strain of neurospora.

The employment problem came in for discussion. Older workers are already on the average unemployed longer. Adding 15 years to the life span would lead to a period of decline in earnings lasting for 25-30 years with serious consequential psychological upsets. Each 5 year increase in the life span would raise the labor force by about 5 percent. Then there would require massive retraining programs for the older workers and without encouragement to take up part-time employment associated with adequate medical and social resources for the existing elderly would be disastrous.

In the discussion pleas were made for controlled studies now of the effect of certain endocrine substances, for example, estrogens in women regarding their influence on the life pattern. Participants although differing in the benefits of and means of prolongation of life were unanimous in the need to plan now for larger numbers of old people. Scientists, sociologists, as well as physicians, should be involved in the planning.—L.H.N.

Dopamine: Release From The Brain In Vivo By Amantadine

(*Science*, 174: 408, October 22, 1971, Von Voigtlander, P. F. and Moore, K. E.) Brains of Parkinson's disease patients contain reduced amounts of dopamine. Amantadine ameliorates the symptoms of Parkinson's disease. These workers, therefore, perfused the caudate nucleus of cats previously labeled with ^3H dopamine with artificial cerebro-

spinal fluid. Adding amantadine to the perfusing fluid caused a dose related increase in the concentration of ^3H dopamine appearing in the perfusion effluent.

Subthreshold concentrations of amantadine also enhanced the effect of ^3H dopamine induced by electrical stimulation of the caudate nucleus.

These actions may be responsible for the ability of this drug to relieve some of the symptoms of Parkinson's disease.—L.H.N.

On Inherited Cancer Gene

(*Geriatrics*, 26: 23, August, 1971.) Dr. Robert Huebner and George Todaro of the NCI have presented evidence that an inherited cancer gene present even before birth could be a necessary factor for normal growth in the developing embryo. This inherited genetic material common to type C RNA viruses which cause certain cancers in mice, chickens, hamsters and cats was detected as a group specific (gs) antigens early in the life of healthy embryos of both laboratory bred and wild mice. This suggests that the virus gene may be a necessary factor in normal growth providing, for example, the basic message to cells to divide and replicate.

Most antigens occurring naturally or extraneously introduced stimulate the production of antibodies against themselves. However, the g.s. antigen discovered by Huebner does not, indicating the animals tolerance for the antigen. An animal does not normally produce antibodies against parts of its own body. The discovery that g.s. antigens in one or more tissues in most of the mouse embryos studies, indicate that the RNA tumor virus may be present at the earliest stage of development and thus the viral material is believed to be part of the animals genetic inheritance.

The premise is made that the g.s. antigen is present from the beginning of life even though inactive as a cancer agent during most of it. The genetic activity is somehow "switched off" for cancer at an early age and lies dormant until it may be "switched on" again by the aging process or an environmental agent. If so, this would account for the greater incidence of cancer in later life.—L.H.N.

Connecticut Medicine

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